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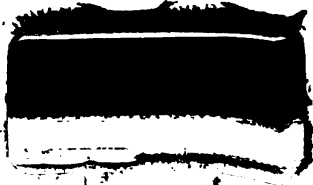


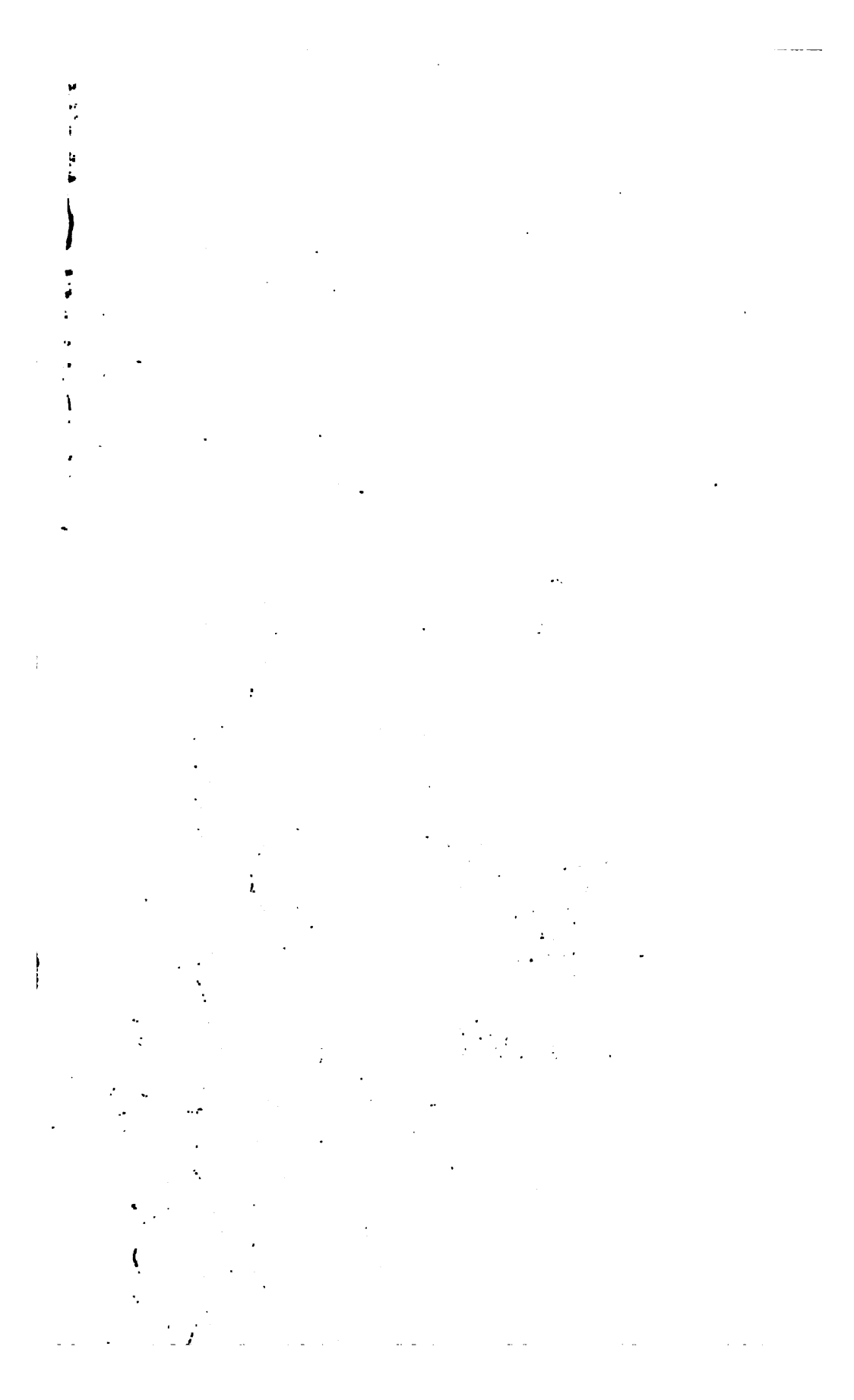
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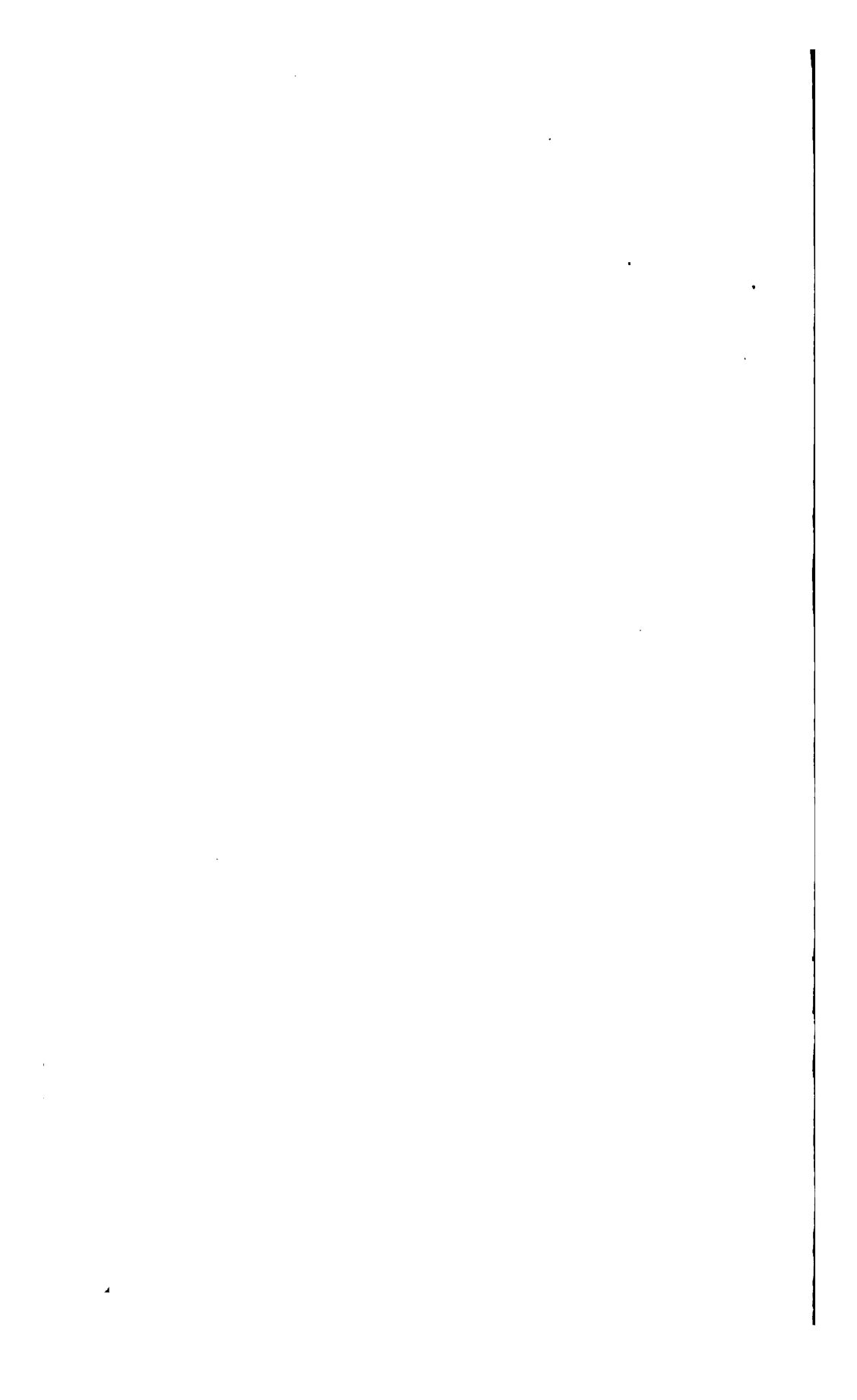
1817

ARTES SCIENTIA VERITAS





1



Commerce & Shipping

U.S. - SPECIAL CONSULAR REPORTS.

HIGHWAYS OF COMMERCE.

THE
OCEAN LINES, RAILWAYS, CANALS, AND OTHER
TRADE ROUTES OF FOREIGN COUNTRIES.

VOL. XII.

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ISSUED FROM THE BUREAU OF STATISTICS, DEPARTMENT OF STATE, IN 1895.
REISSUED, WITH SUPPLEMENTARY REPORTS AND NEW CHART OF
OCEAN ROUTES FOR STEAM VESSELS, FROM THE BUREAU OF
FOREIGN COMMERCE, DEPARTMENT OF STATE, IN 1899.



WASHINGTON
GOVERNMENT PRINTING OFFICE
1899.

PUBLICATIONS OF THE BUREAU OF FOREIGN COMMERCE

The publications of the Bureau of Foreign Commerce, Department of Commerce, being the annual reports of consular officers of commerce, industries, navigation, etc., of their districts.

II.—CONSULAR REPORTS, issued monthly, and containing miscellaneous from diplomatic and consular officers.

III.—ADVANCE SHEETS, CONSULAR REPORTS, issued daily except Sunday holidays, for the convenience of the newspaper press, commercial and touring organizations, etc.

IV.—EXPORTS DECLARED FOR THE UNITED STATES, issued quarterly, giving the declared values of exports from the various consular districts to States for the preceding three months.

V.—SPECIAL CONSULAR REPORTS, containing series of reports from consular officers on particular subjects, made in pursuance of instructions from the Department.

Following are the special publications issued by the Bureau prior to 1890: Labor in Europe, 1878, one volume; Labor in Foreign Countries, 1884, same; Commerce of the World and the Share of the United States Therein, 1880-81; Exports for the United States, First and Second Quarters, 1883; Declared Exports for the United States, Third and Fourth Quarters, 1883; Cholera in European Trade Guilds of Europe, 1885; The Licorice Plant, 1885; Forestry in European Emigration and Immigration, 1885-88 (a portion of this work was published in CONSULAR REPORTS No. 76, for the month of April, 1887); Rice Pounding, 1887; Sugar of Milk, 1887; Wool Scouring in Belgium, 1887; Cattle and Pigs in Foreign Countries, 1888 (issued first in one volume, afterwards in two Technical Education in Europe, 1888; Tariffs of Central America and West Indies, 1890.

The editions of all these publications, except Tariffs in Central America exhausted and the Department is therefore unable to supply copies.

In 1890 the Department decided to publish reports on special subjects in form, to be entitled SPECIAL CONSULAR REPORTS. There are now the SPECIAL CONSULAR REPORTS:

Vol. 1 (1890).—Cotton Textiles in Foreign Countries, Flax in Spanish America, Carpet in Foreign Countries, Malt and Beer in Spanish America, and Fruit Culture in Foreign Countries.

Vol. 2 (1890 and 1891).—Refrigerators and Food Preservation in Foreign Countries, Emigration, Olive Culture in the Alps Maritime, and Beet-Sugar Industry and Flax in Foreign Countries.

Vol. 3 (1891).—Streets and Highways in Foreign Countries. New edition, 1897.

Vol. 4 (1891).—Port Regulations in Foreign Countries.

Vol. 5 (1891).—Canals and Irrigation in Foreign Countries. New edition, 1898.

Vol. 6 (1891 and 1897).—Coal and Coal Consumption in Spanish America, Asia, in Foreign Countries, and India, Babbles.

Vol. 7 (1892).—The Slave Trade in Foreign Countries and Tariffs of Foreign Countries.

Vol. 8 (1892).—Fire and Building Regulations in Foreign Countries.

Vol. 9 (1892 and 1897).—Astration (Cheap and Wood, and Vagrancy and Public Charities in Foreign Countries.

Vol. 10 (1894).—Lead and Zinc Mining in Foreign Countries and Extension of Markets for Flour. (More reports released, 1897.

Vol. 11 (1894).—American Lumber in Foreign Markets. Reissue of 1897.

Vol. 12 (1897).—Highways of Commerce. New edition, 1899.

Vol. 13 (1898 and 1897).—Money and Prices in Foreign Countries.

Vol. 14 (1898).—The Drug Trade in Foreign Countries.

Vol. 15 (1898).—Part I. Sheep Trade in Foreign Countries; Sewers, Saws, and Boats in Foreign Countries; Argols in Europe, Rabbits and Rabbit Furs in Europe, and Utilization of Nuts in Foreign Countries. Part II. Sericulture and Silk Reeling and Cultivation of the English Walnut.

Vol. 16 (1898).—Tariffs of Foreign Countries—Part I, Europe. Part II, America.

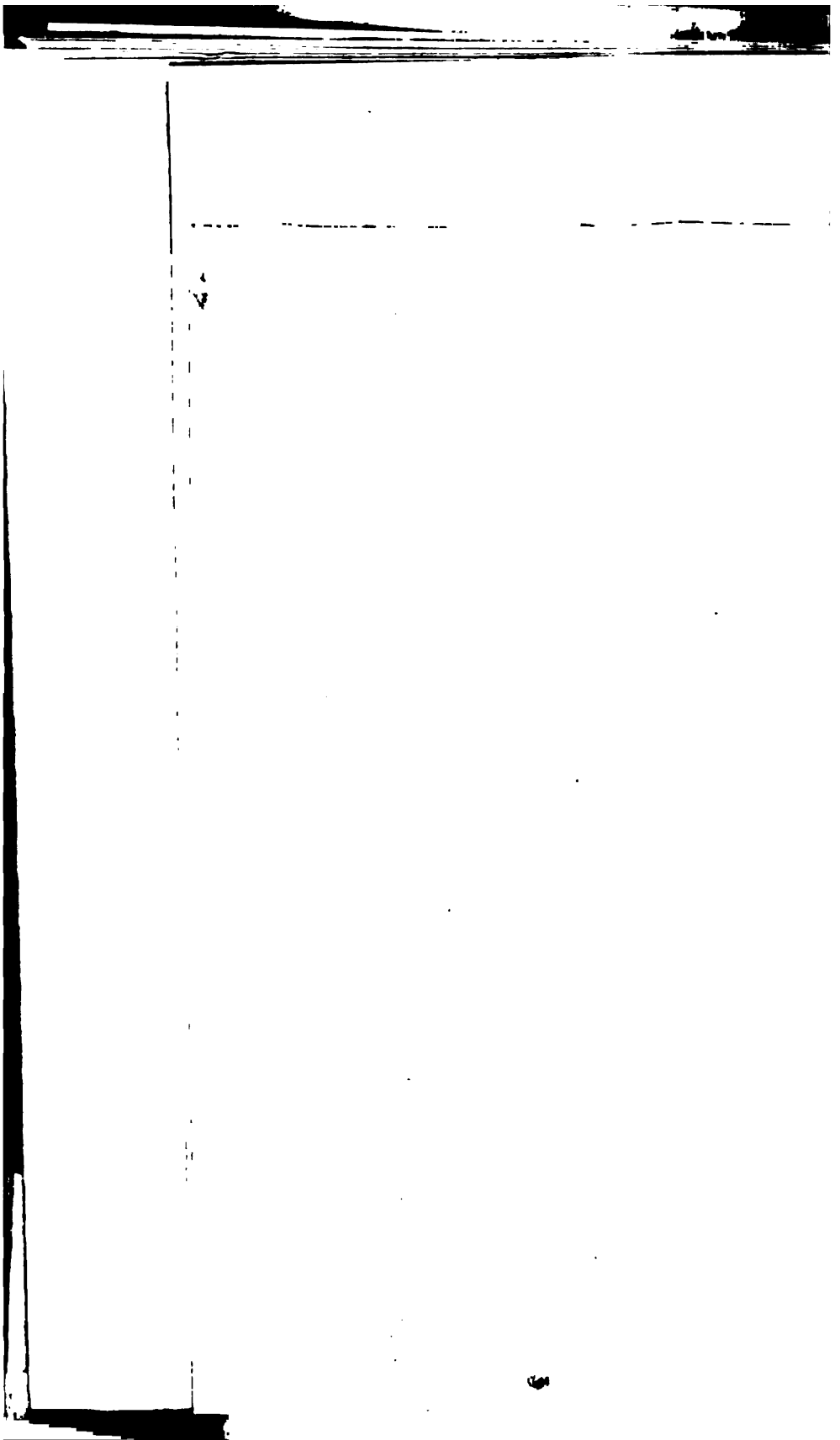
Of these SPECIAL CONSULAR REPORTS, Australian Sheep and Wool, Cotton in Foreign Countries, Flax in Spanish America, Fire and Building Regulations in Foreign Countries, Lead and Zinc Mining, Malt and Beer in Spanish America, Port Regulations, Refrigerators and Food Preservation, Vagrancy, etc., are exhausted and no copies can be supplied by the Department.

Of the monthly CONSULAR REPORTS, many numbers are exhausted or so that the Department is unable to accede to requests for copies. Of the publications of the Bureau available for distribution, copies are mailed to applicants without charge. In view of the scarcity of certain numbers, the Bureau will be glad to return any copies of the monthly or special reports which recipients care to retain. Upon notification of willingness to return such copies, the mail will forward franking labels to be used in lieu of postage in the United States, Canada, the Hawaiian Islands, and Mexico.

Persons receiving CONSULAR REPORTS regularly who change their addresses give the old as well as the new address in notifying the Bureau of the fact.

In order to prevent confusion with other Department bureaus, all communications relating to CONSULAR REPORTS should be carefully addressed, "Chief, Bureau of Foreign Commerce, Department of State, Washington, U. S. A."

* Formerly Bureau of Statistics. Name changed to Bureau of Foreign Commerce by act of Secretary of State July 1, 1897.





U. S. Bureau of Foreign Commerce
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CONTENTS.

	Page.
Values of foreign coins.....	4-8
Foreign weights and measures.....	9-12
Explanatory.....	13
Instruction to consular officers.....	15
Railways and telegraphs of the world.....	16-18

AMERICA.

Dominion of Canada:	
Introductory statistics.....	19-27
British Columbia.....	27-31
Manitoba.....	31-33
Ontario.....	33, 34
New Brunswick.....	35-37
Nova Scotia.....	37
Newfoundland.....	38
Prince Edward Island.....	38-41
Mexico.....	41-71
Central America:	
Guatemala.....	71
British Honduras.....	72
Honduras.....	73
Salvador.....	74
Nicaragua.....	75-78
Costa Rica.....	78
West Indies:	
Bahamas.....	79, 80
Bermuda.....	81
Cuba.....	81-85
Haiti.....	85
Santo Domingo.....	85
Puerto Rico.....	86
Jamaica.....	86, 87
South America:	
Intercontinental Railway.....	88, 89
Colombia.....	89-101
Panama Canal.....	101-103
Venezuela.....	103-106
British Guiana (<i>see also</i> Appendix).....	106-108
Brazil.....	108-118
Ecuador.....	118-121
Peru.....	121-128
Bolivia.....	128-136
Chili.....	136-139
Paraguay.....	139-143
Uruguay.....	145, 146
Argentine Republic.....	146-152

	Page.
EUROPE.	
United Kingdom.....	153-188
England.....	189-193
Liverpool, 189; London, 190; Southampton, 193.	
Wales.....	194-203
Scotland.....	204-214
Ireland.....	215-224
Belgium.....	224-235
Holland.....	235-239
Denmark.....	240-246
France.....	246-282
Spain (<i>see also</i> Appendix).....	282-302
Gibraltar.....	303, 304
Germany.....	305, 331
Luxemburg.....	331-334
Switzerland.....	335-338
Austria-Hungary.....	338-355
Austria, 338; Bohemia, 344; Hungary, 348.	
Italy.....	355-386
Italy, 355; Mont Cenis Tunnel, 361; Genoa, 368; Palermo, 373.	
Greece.....	386-389
Turkey.....	389-392
Bulgaria.....	392, 393
Russia.....	393-421
St. Petersburg, 393; Odessa, 403; Great Siberian Railway, 409; Finland, 418.	
Norway.....	422-424
Sweden.....	425, 426
AFRICA.	
Morocco.....	427-430
Algeria.....	431-438
Tunis.....	438-442
Tripoli.....	443-445
Egypt.....	445-451
Madagascar.....	451-457
Mauritius.....	457-460
Mozambique.....	460-467
Somali Coast (British).....	468, 469
Zanzibar.....	470
Cape Colony.....	471-473
Orange Free State.....	473-476
Natal.....	477-480
Central Africa (British).....	480-488
German Africa.....	489-496
Togoland, 489; Cameroons, 491; East and Southwest Africa, 493.	
Angola (Portuguese).....	497-502
Congo Free State.....	502-507
Liberia.....	508
Sierra Leone.....	509-513
Senegal.....	513
Madeira.....	514, 515
ASIA.	
Turkey in Asia.....	517-531
Asia Minor, 517; Bagdad, 518; Syria, 522; Palestine, 527.	
Maskat.....	531

CONTENTS.

3

	Page
Persia	532-542
British India.....	543-570
Calcutta, 543; Bombay, 562.	
Ceylon	570-577
Straits Settlements.....	578-584
Malay States.....	585
Selangor, 585; Sungie Ujong, 588; Perak, 590.	
Dutch India	591-596
Java, 591; Sumatra, 596.	
China.....	597-611
Shanghai, 597; Tientsin, 604; Hongkong, 608.	
Japan	611-616
Korea.....	617
Cochin China.....	617
Philippine Islands.....	618-620

AUSTRALASIA.

New South Wales.....	620-627
Victoria	627-638
New Zealand.....	639-649

POLYNESIA.

New Caledonia.....	650
Fiji Islands.....	650-653
Tahiti	654
Hawaiian Islands.....	655-658

APPENDIX.

A. Ocean lines from United States ports.....	661-696
B. Dutch Guiana	696-698
C. Spanish railways	698-703
D. New tariff rates of Austrian State railways	703
E. Interior waterways of northwest Europe	704-728
F. Brazil (ocean lines and railroads)	729-743

MAPS.

Tracks for full-powered steamships.....	Frontispiece
Railroads, principal rivers, ports, and steamship lines in Mexico.....	41
Comparison of the Tehuantepec, Nicaragua, and Panama routes.....	54
Welsh coal fields.....	194
Railroads in the district of Genoa.....	371
Great Siberian Railway	418
Land and water routes of Madagascar.....	471 41
Natal Government Railways.....	478
Railways, telegraphs, and steamship routes of India.....	543

SUPPLEMENTARY REPORTS.

	Page.		Page.
Europe	747	South America—Continued.	
Austria-Hungary	747	Uruguay	892
Belgium	751	Venezuela	892
Denmark	761	Africa	894
France	762	Abyssinia	895
Germany	768	Angola	896
Greece	780	Azores	897
Italy	782	British East Africa	897
Malta	787	Cape Verde Islands	898
Netherlands	788	Egypt	899
Russia	795	French Guinea	903
Spain	803	Lourenço Marquez	903
Sweden and Norway	808	Madagascar	909
Switzerland	810	Mauritius	911
Turkey in Europe	810	Morocco	911
United Kingdom	811	Sierra Leone	913
North America	816	South Africa	914
Dominion of Canada	816	St. Helena	916
Mexico	826	Tunis	917
Central America	853	Asia	918
British Honduras	834	Aden	919
Guatemala	835	British India	920
Honduras	837	China	922
Nicaragua	839	Dutch India	935
Salvador	844	French Indo-China	935
West Indies	845	Japan	936
British West Indies	845	Korea	942
Cuba	850	Persia	943
French West Indies	852	Siam	946
Haiti	853	Straits Settlements	946
Puerto Rico	855	Turkey in Asia	950
Santo Domingo (Dominican Republic)	856	Australasia	954
South America	856	New South Wales	954
Argentine Republic	859	New Zealand	956
Brazil	865	Queensland	957
British Guiana	878	South Australia	958
Chile	879	Polynesia	959
Colombia	881	Hawaii	959
Ecuador	887	New Caledonia	961
Paraguay	889	Philippine Islands	963
Peru	890	Samoa	963
		Society Islands	964

VALUES OF FOREIGN COINS AND CURRENCIES.

The following statements show the valuation of foreign coins, as given by the Director of the United States Mint and published by the Secretary of the Treasury, in compliance with the first section of the act of March 3, 1873, viz: "That the value of foreign coins, as expressed in the money of account of the United States, shall be that of the pure metal of such coin of standard value," and that "the value of the standard coins in circulation of the various nations of the world shall be estimated annually by the Director of the Mint, and be proclaimed on the 1st day of January by the Secretary of the Treasury."

In compliance with the foregoing provisions of law, annual statements were issued by the Treasury Department, beginning with that issued on January 1, 1874, and ending with that issued on January 1, 1890. Since that date, in compliance with the act of October 1, 1890, these valuation statements have been issued quarterly, beginning with the statement issued on January 1, 1891.

The fact that the market exchange value of foreign coins differs in many instances from that given by the United States Treasury has been repeatedly called to the attention of the Bureau of Foreign Commerce. An explanation of the basis of the quarterly valuations was asked from the United States Director of the Mint, and under date of February 7, 1898, Mr. R. E. Preston makes the following statement:

"When a country has the single gold standard, the value of its standard coins is estimated to be that of the number of grains fine of gold in them, 480 grains being reckoned equivalent to \$20.67 in United States gold, and a smaller number of grains in proportion. When a country has the double standard, but keeps its full legal-tender silver coins at par with gold, the coins of both gold and silver are calculated on the basis of the gold value.

"The value of the standard coins of countries with the single silver standard is calculated to be that of the average market value of the pure metal they contained during the three months preceding the date of the proclamation of their value in United States gold by the Secretary of the Treasury. The value of the gold coins of silver-standard countries is calculated at that of the pure gold they contain, just as if they had the single gold standard.

"These valuations are used in estimating the values of all foreign merchandise exported to the United States. The value of the Indian rupee, although calculated according to law at the value of the pure metal contained therein, has a commercial value above the value of the silver bullion; consequently the value for customs purposes is determined in each case by the consular certificates attached to the invoice of exports from that country to the United States."

The following statements, running from January 1, 1874, to July 1, 1899, have been prepared, to assist in computing the values in American money of the trade, prices, values, wages, etc., of and in foreign countries, as given in consular and other reports. The series of years are given so that computations may be made for each year in the proper money values of such year. In hurried computations, the reductions of foreign currencies into American currency, no matter for how many years, are too often made on the bases of latest valuations. When it is taken into account

that the ruble of Russia, for instance, fluctuated from 77.17 cents in 1874 to 37.4 cents in April, 1897, such computations are wholly misleading. All computations of values, trade, wages, prices, etc., of and in the "fluctuating-currency countries" should be made in the values of their currencies in each year up to and including 1890, and in the quarterly valuations thereafter.

To meet typographical requirements, the quotations for the years 1876, 1877, 1879, 1881, 1882, and 1891-95 are omitted, these years being selected as showing the least fluctuations when compared with years immediately preceding and following.

To save unnecessary repetition, the estimates of valuations are divided into three classes, viz: (A) countries with fixed currencies, (B) countries with fluctuating currencies, and (C) quarterly valuations of fluctuating currencies.

A.—Countries with fixed currencies.

The following official (United States Treasury) valuations of foreign coins do not include "rates of exchange."

Countries.	Standard.	Monetary unit.	Value in U.S. gold.	Coins.
Argentine Republic*	Gold and silver..	Peso.....	\$0.96,5	Gold—Argentine (\$4.82,4) and ½ Argentine; silver—peso and divisions.
Austria-Hungary†....	Gold	Crown.....	.20,3	Gold—20 crowns (\$4.05,2) and 10 crowns.
Belgium	Gold and silver..	Franc.....	.19,3	Gold—10 and 20 franc pieces; silver—5 francs.
Brazil.....	Gold	Milreis.....	.54,6	Gold—5, 10, and 20 milreis; silver—½, 1, and 2 milreis.
British North America (except Newfoundland).	.....do.....	Dollar.....	1.00	
British Honduras.....	.....do.....	.....do.....	1.00	
Chile.....	.....do.....	Peso.....	.36,5	Gold—escudo (\$1.25), doubloon (\$3.65), and condor (\$7.30); silver—peso and divisions.
Costa Rica.....	.....do.....	Colon.....	.46,5	Gold—2, 5, 10, and 20 colons; silver—5, 10, 25, and 50 centimos.
Cuba	Gold and silver..	.....do.....	.92,6	Gold—doubloon (\$5.01,7); silver—peso (60 cents).
Denmark	Gold	Crown.....	.26,8	Gold—10 and 20 crowns.
Egypt.....	.....do.....	Pound (100 piasters).	4.94,3	Gold—10, 20, 50, and 100 piasters; silver—1, 2, 10, and 20 piasters.
Finland.....	.....do.....	Mark.....	.19,3	Gold—10 and 20 marks (\$1.93 and \$3.85,0).
France	Gold and silver..	Franc.....	.19,3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Germany	Gold	Mark.....	.23,8	Gold—5, 10, and 20 marks.
Great Britain.....	.....do.....	Pound sterling..	4.86,6½	Gold—sovereign (pound sterling) and half sovereign.
Greece.....	Gold and silver..	Drachma.....	.19,3	Gold—5, 10, 20, 50, and 100 drachmas; silver—5 drachmas.
Haiti .....	.....do.....	Gourde.....	.96,5	Silver—gourde.
Italy.....	.....do.....	Lira.....	.19,3	Gold—5, 10, 20, 50, and 100 lire silver—5 lire.
Japan‡.....	Gold.....	Yen.....	.49,8	Gold—1, 2, 5, 10, and 20 yen.
Liberia .....	.....do.....	Dollar.....	1.00	
Netherlands§.....	Gold and silver..	Florin.....	.49,2	Gold—10 florins; silver—½, 1, and 2½ florins.
Newfoundland	Gold	Dollar.....	1.01,4	Gold—\$2 (\$2.02,7).
Portugal.....	.....do.....	Milreis.....	1.08	Gold—1, 2, 5, and 10 milreis.
Russia |.....	.....do.....	Ruble.....	.51,5	Gold—imperial (\$7.718) and ½ imperial (\$3.80); silver—¼, ½, and 1 ruble.
Spain.....	Gold and silver..	Peseta.....	.19,3	Gold—25 pesetas; silver—5 pesetas.
Sweden and Norway.	Gold	Crown.....	.26,8	Gold—10 and 20 crowns.
Switzerland	Gold and silver..	Franc.....	.19,3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Turkey	Gold	Piaster.....	.04,4	Gold—25, 50, 100, 200, and 500 piasters.
Uruguay	Gold	Peso.....	1.03,4	Gold—peso; silver—peso and divisions.
Venezuela.....	Gold and silver..	Bolivar.....	.19,3	Gold—5, 10, 20, 50, and 100 bolivars; silver—5 bolivars.

* In 1874 and 1875, the gold standard prevailed.

† The gold standard was adopted October 1, 1892. (See CONSULAR REPORTS No. 147, p. 623.) Values are still, however, frequently expressed in the florin or gulden, which is worth 2 crowns or 40.6 cents.

‡ Gold standard adopted October 1, 1897. (See CONSULAR REPORTS No. 201, p. 259.)

§ See note to table of fluctuating currencies.

| For an account of the adoption of the gold standard, see Review of the World's Commerce, 1896-97, p. 234.

B.—Countries with fluctuating currencies, 1874-1890.

Countries.	Standard.	Monetary unit.	Value in terms of the United States gold dollar on January 1—					
			1874.	1875.	1878.	1880.	1883.	1884.
Austria-Hungary*	Silver.....	Florin.....	\$0.47,6	\$0.45,3	\$0.45,3	\$0.41,3	\$0.40,1	\$0.39,8
Bolivia.....	.....do.....	Dollar until 1890; boliviano thereafter.	.96,5	.96,5	.96,5	.83,6	.81,2	.80,6
Central America.....	.....do.....	Peso.....	.96,5	.91,8	.91,8	.83,6		
China.....	Silver.....	Haikwan tael..	1.61	1.61				
Colombia.....	.....do.....	Peso.....	.96,5	.96,5	.96,5	.83,6	.81,2	.80,6
Ecuador.....	.....do.....	.....do.....	.96,5	.91,8	.91,8	.83,6	.81,2	.80,6
Egypt†.....	Gold.....	Pound (100 piasters).			4.97,4	4.97,4	4.90	4.90
India.....	Silver.....	Rupee.....	.45,8	.43,6	.43,6	.39,7	.38,6	.38,3
Japan.....	{ Gold..... Silver..... }	{ Yen..... }	.99,7	.99,7	.99,7	.99,7		
Mexico.....	.....do.....	Dollar.....	1.04,7‡	.99,8	.99,8	.90,9	.88,2	.87,5
Netherlands‡.....	Gold and Silver.	Florin.....	.40,5	.38,5	.38,5	.40,2		
Peru.....	Silver.....	Sol.....	.91,5	.91,8	.91,8	.83,6	.81,2	.80,6
Russia.....	.....do.....	Ruble.....	.77,17	.73,4	.73,4	.66,9	.65	.64,5
Tripoli.....	.....do.....	Mahbub of 20 piasters.	.87,00	.82,9	.82,9	.74,8	.73,3	.72,7

Countries.	Standard.	Monetary unit.	Value in terms of the United States gold dollar on January 1—					
			1885.	1886.	1887.	1888.	1889.	1890.
Austria-Hungary*	Silver.....	Florin.....	\$0.39,3	\$0.37,1	\$0.35,9	\$0.34,5	\$0.33,6	\$0.42
Bolivia.....	.....do.....	Dollar until 1880; boliviano thereafter.	.79,5	.75,1	.72,7	.69,9	.68	.85
Central America.....	.....do.....	Peso.....				.69,9	.68	.85
Colombia.....	.....do.....	.....do.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Ecuador.....	.....do.....	.....do.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Egypt†.....	Gold.....	Pound (100 piasters).	4.90	4.90	4.94,3	4.94,3	4.94,3	4.94,3
India.....	Silver.....	Rupee.....	.37,8	.35,7	.34,6	.32,2	.32,3	.40,4
Japan.....	{ Gold..... Silver..... }	{ Yen..... }	.85,8	.81	.78,4	.75,3	.73,4	.91,7
Mexico.....	.....do.....	Dollar.....	.86,4	.81,6	.79	.75,9	.73,9	.92,3
Peru.....	Silver.....	Sol.....	.79,5	.75,1	.72,7	.69,9	.68	.85
Russia.....	.....do.....	Ruble.....	.63,6	.60,1	.58,2	.55,9	.54,4	.68
Tripoli.....	.....do.....	Mahbub of 20 piasters.	.71,7	.67,7	.65,6	.63	.61,4	.76,7

* The silver standard prevailed in Austria-Hungary up to 1892. The law of August 2 of that year (see CONSULAR REPORTS, No. 147, p. 623) established the gold standard.

† The Egyptian pound became fixed in value at \$4.94,3 in 1887.

‡ The Netherlands florin fluctuated up to the year 1880, when it became fixed at 40.2 cents.

C.—Quarterly valuations of fluctuating currencies.

Countries.	Monetary unit.	1896.				1897.			
		Jan. 1.	April 1.	July 1.	Oct. 1.	Jan. 1.	April 1.	July 1.	Oct. 1.
Bolivia.....	Silver boliviano.....	\$0.49,1	\$0.49,3	\$0.49,7	\$0.49	\$0.47,4	\$0.46,8	\$0.44,3	\$0.41,2
Central America.	Silver peso.....	.49,1	.49,3	.49,7	.49	.47,4	.46,5	.44,3	.41,2
China.....	Amoy tael.....				.79,3	.76,7	.75,7	.71,7	.66,4
	Canton tael.....				.79	.76,5	.75,5	.71,5	.66,4
	Chefoo tael.....	.75,9	.76,3	.76,9	.75,8	.73,3	.72,4	.68,6	.63,7
	Chinkiang tael.....				.77,4	.74,9	.73,9	.70	.65,1
	Fuchau tael.....				.73,3	.70,9	.70	.66,3	.61,6
	Haikwan tael.....	.80,8	.81,2	.81,9	.80,6	.78	.77	.73,1	.67,8
	Hankau tael.....				.74,2	.71,7	.70,8	.67,1	.62,3
	Ningpo tael.....				.76,2	.73,7	.72,8	.68,9	.64
	Niuchwang tael.....				.74,3	.71,9	.71	.67,2	.62,5
	Shanghai tael.....	.72,5	.72,9	.73,5	.72,4	.70	.69,1	.65,5	.60,8
Swatow tael.....				.73,2	.70,8	.69,9	.66,2	.61,5	
Takao tael.....				.70,8	.77,2	.76,2	.72,2	.67	
Tientsin tael.....	.76,9	.77,3	.78	.76,8	.74,3	.73,4	.69,5	.64,6	
Colombia.....	Silver peso.....	.49,1	.49,3	.49,7	.49	.47,4	.46,8	.44,3	.41,2
Ecuador.....	do.....	.49,1	.49,3	.49,7	.49	.47,4	.46,8	.44,3	.41,2
India.....	Silver rupee.....	.23,3	.23,4	.23,6	.23,3	.22,5	.22,2	.21,1	.19,6
Japan.....	Silver yen.....	.52,9	.53,2	.53,2	.52,8	.51,1	.50,5		
Mexico.....	Silver dollar.....	.53,3	.53,6	.54	.53,2	.51,5	.50,8	.48,2	.44,6
Persia.....	Silver kran.....	.09	.09,1	.09,2	.09	.08,7	.08,6	.08,2	.07,6
Peru.....	Silver sol.....	.49,1	.49,3	.49,7	.49	.47,4	.46,8	.44,3	.41,2
Russia.....	Silver ruble.....	.39,3	.39,5	.39,8	.39,2	.37,9	.37,4		
Tripoli.....	Silver mahbub.....	.44,3	.44,5	.44,9	.44,2				

Countries.	Monetary unit.	1898.				1899.		
		Jan. 1.	April 1.	July 1.	Oct. 1.	Jan. 1.	April 1.	July 1.
Bolivia.....	Silver boliviano.....	\$0.42,4	\$0.40,9	\$0.41,8	\$0.43,6	\$0.43,9	\$0.43,4	\$0.44,3
Central America.....	Silver peso.....	.41,4	.40,9	.41,8	.43,6	.43,9	.43,4	.44,3
China.....	Amoy tael.....	.68,5	.66,2	.67,6	.70,6	.71	.70,2	.71,6
	Canton tael.....	.68,3	.66	.67,4	.70,4	.70,8	.70	.71,4
	Chefoo tael.....	.65,5	.63,3	.64,6	.67,5	.67,9	.67,2	.68,4
	Chinkiang tael.....	.66,9	.64,6	.66	.69	.69,3	.68,6	.69,9
	Fuchau tael.....	.63,4	.61,2	.62,5	.65,3	.65,6	.65	.66,2
	Haikwan tael.....	.69,7	.67,3	.68,8	.71,8	.72,2	.71,4	.72,8
	Hankau tael.....	.64,1	.61,9	.63,2	.66	.66,4	.65,7	.67
	Ningpo tael.....	.64,3	.63	.65	.67,9	.68,2	.67,5	.68,8
	Niuchwang tael.....	.65,9	.62	.63,4	.66,2	.66,5	.65,9	.67,1
	Shanghai tael.....	.62,6	.60,4	.61,7	.64,5	.64,8	.64,1	.65,4
Swatow tael.....	.63,3	.61,1	.62,4	.65,2	.65,5	.64,9	.66,1	
Takao tael.....	.66	.66,6	.68	.71	.71,4	.70,7	.72	
Tientsin tael.....	.66,4	.64,1	.65,5	.68,4	.68,8	.68	.69,4	
Colombia.....	Silver peso.....	.42,4	.40,9	.41,8	.43,6	.43,9	.43,4	.44,3
Ecuador.....	do.....	.42,4	.40,9	.41,8	.43,6	.43,9	.43,4	.44,3
India *.....	Silver rupee.....	.20,1	.19,1	.19,9	.20,7	.20,8	.20,6	.21
Japan.....	Silver yen.....							.49,8
Mexico.....	Silver dollar.....	.46	.44,4	.45,4	.47,4	.47,7	.47,2	.48,1
Persia.....	Silver kran.....	.07,8	.07,5	.07,7	.08	.08,1	.08	.08,2
Peru.....	Silver sol.....	.42,4	.40,9	.41,8	.43,6	.43,9	.43,4	.44,3

* The commercial value of the rupee to be determined by consular certificate.

FOREIGN WEIGHTS AND MEASURES.

The following table embraces only such weights and measures as are given from time to time in CONSULAR REPORTS and in Commercial Relations:

Foreign weights and measures, with American equivalents.

Denominations.	Where used.	American equivalents.
Almude	Portugal.....	4.422 gallons.
Ardeb.....	Egypt.....	7.6907 bushels.
Are.....	Metric.....	0.02471 acre.
Arrobe.....	Paraguay.....	25 pounds.
Arratel or libra.....	Portugal.....	1.011 pounds.
Arroba (dry).....	Argentine Republic.....	25.3175 pounds.
Do.....	Brazil.....	38.38 pounds.
Do.....	Cuba.....	25.3664 pounds.
Do.....	Portugal.....	32.38 pounds.
Do.....	Spain.....	25.36 pounds.
Do.....	Venezuela.....	25.4024 pounds.
Arroba (liquid).....	Cuba, Spain, and Venezuela.....	4.263 gallons.
Arshine.....	Russia.....	28 inches.
Arshine (square).....	do.....	5.44 square feet.
Artel.....	Morocco.....	1.12 pounds.
Baril.....	Argentine Republic and Mexico.....	20.0787 gallons.
Barrel.....	Malta (customs).....	11.4 gallons.
Do.....	Spain (raisins).....	100 pounds.
Berkovets.....	Russia.....	361.12 pounds.
Bongkal.....	India.....	832 grains.
Bouw.....	Sumatra.....	7,096.5 square meters.
Bu.....	Japan.....	0.1 inch.
Butt (wine).....	Spain.....	140 gallons.
Caffiso.....	Malta.....	5.4 gallons.
Candy.....	India (Bombay).....	520 pounds.
Do.....	India (Madras).....	500 pounds.
Cantar.....	Morocco.....	113 pounds.
Do.....	Syria (Damascus).....	575 pounds.
Do.....	Turkey.....	124.7036 pounds.
Cantaro (cantar).....	Malta.....	175 pounds.
Carga.....	Mexico and Salvador.....	300 pounds.
Catty.....	China.....	1.333½ (1½) pounds.
Do*.....	Japan.....	1.31 pounds.
Do.....	Java, Siam, and Malacca.....	1.35 pounds.
Do.....	Sumatra.....	2.12 pounds.
Centaro.....	Central America.....	4.2631 gallons.
Centner.....	Bremen and Brunswick.....	117.5 pounds.
Do.....	Darmstadt.....	110.24 pounds.
Do.....	Denmark and Norway.....	110.11 pounds.
Do.....	Nuremberg.....	112.43 pounds.
Do.....	Prussia.....	113.44 pounds.
Do.....	Sweden.....	93.7 pounds.
Do.....	Vienna.....	123.5 pounds.
Do.....	Zollverein.....	110.24 pounds.
Do.....	Double or metric.....	220.46 pounds.
Chih.....	China.....	14 inches.

* More frequently called "kin."
avoirdupois.

Among merchants in the treaty ports it equals 1.33½ pounds

Foreign weights and measures, with American equivalents—Continued.

Denominations.	Where used.	American equivalents.
Coyan.....	Sarawak.....	3,098 pounds.
Do.....	Siam (Koyan).....	2,667 pounds.
Cuadra.....	Argentine Republic.....	4.2 acres.
Do.....	Paraguay.....	78.9 yards.
Do.....	Paraguay (square).....	8.077 square feet.
Do.....	Uruguay.....	Nearly 2 acres.
Cubic meter.....	Metric.....	35.3 cubic feet.
Cwt. (hundredweight).....	British.....	112 pounds.
Dessiatine.....	Russia.....	2.6997 acres.
Do.....	Spain.....	1.599 bushels.
Drachme.....	Greece.....	Half ounce.
Egyptian weights and measures.....	(See CONSULAR REPORTS NO. 144.)	
Fanega (dry).....	Central America.....	1.5745 bushels.
Do.....	Chile.....	2.575 bushels.
Do.....	Cuba.....	1.599 bushels.
Do.....	Mexico.....	1.54728 bushels.
Do.....	Morocco.....	Strike fanega, 70 lbs.; full fanega, 118 lbs.
Do.....	Uruguay (double).....	7.776 bushels.
Do.....	Uruguay (single).....	3.888 bushels.
Do.....	Venezuela.....	1.599 bushels.
Fanega (liquid).....	Spain.....	16 gallons.
Feddan.....	Egypt.....	1.03 acres.
Frail (raisins).....	Spain.....	50 pounds.
Frasco.....	Argentine Republic.....	2.506 quarts.
Do.....	Mexico.....	2.5 quarts.
Fuder.....	Luxemburg.....	264.17 gallons.
Garnice.....	Russian Poland.....	0.88 gallon.
Gram.....	Metric.....	15.432 grains.
Hectare.....	do.....	2.471 acres.
Hectoliter:		
Dry.....	do.....	2.838 bushels.
Liquid.....	do.....	26.417 gallons.
Joch.....	Austria-Hungary.....	1.422 acres.
Ken.....	Japan.....	6 feet.
Kilogram (kilo).....	Metric.....	2.2046 pounds.
Kilometer.....	do.....	0.621376 mile.
Klafter.....	Russia.....	216 cubic feet.
Koku.....	Japan.....	4.9629 bushels.
Korree.....	Russia.....	3.5 bushels.
Kwan.....	Japan.....	8.28 pounds.
Last.....	Belgium and Holland.....	85.134 bushels.
Do.....	England (dry malt).....	82.52 bushels.
Do.....	Germany.....	2 metric tons (4,48 pounds).
Do.....	Prussia.....	112.29 bushels.
Do.....	Russian Poland.....	113½ bushels.
Do.....	Spain (salt).....	4,760 pounds.
League (land).....	Paraguay.....	4,633 acres.
Li.....	China.....	2,115 feet.
Libra (pound).....	Castilian.....	7,100-grains (troy).
Do.....	Argentine Republic.....	1.0127 pounds.
Do.....	Central America.....	1.043 pounds.
Do.....	Chile.....	1.014 pounds.
Do.....	Cuba.....	1.0161 pounds.
Do.....	Mexico.....	1.01465 pounds.
Do.....	Peru.....	1.0143 pounds.
Do.....	Portugal.....	1.011 pounds.
Do.....	Uruguay.....	1.0143 pounds.
Do.....	Venezuela.....	1.0161 pounds.
Liter.....	Metric.....	1.0567 quarts.
Livre (pound).....	Greece.....	1.1 pounds.
Do.....	Guiana.....	1.0791 pounds.

Foreign weights and measures, with American equivalents—Continued.

Denominations.	Where used.	American equivalents.
Load.....	England (timber).....	Square, 50 cubic feet; unhewn, 40 cubic feet; 1 inch planks, 600 superficial feet.
Manzana.....	Costa Rica.....	1½ acres.
Do.....	Nicaragua and Salvador.....	1.727 acres.
Marc.....	Bolivia.....	0.507 pound.
Maund.....	India.....	82½ pounds.
Meter.....	Metric.....	39.37 inches.
Mil.....	Denmark.....	4.68 miles.
Do.....	Denmark (geographical).....	4.61 miles.
Milla.....	Nicaragua and Honduras.....	1.1403 miles.
Morgen.....	Prussia.....	0.63 acre.
Oke.....	Egypt.....	2.7225 pounds.
Do.....	Greece.....	2.84 pounds.
Do.....	Hungary.....	3.0817 pounds.
Do.....	Turkey.....	2.85418 pounds.
Do.....	Hungary and Wallachia.....	2.5 pints.
Pic.....	Egypt.....	21¼ inches.
Picul.....	Borneo and Celebes.....	135.64 pounds.
Do.....	China, Japan, and Sumatra.....	133½ pounds.
Do.....	Java.....	135.1 pounds.
Do.....	Philippine Islands (hemp).....	139.45 pounds.
Do.....	Philippine Islands (sugar).....	140 pounds.
Pie.....	Argentine Republic.....	0.9478 foot.
Do.....	Castile.....	0.91407 foot.
Pik.....	Turkey.....	27.9 inches.
Pood.....	Russia.....	36.112 pounds.
Pund (pound).....	Denmark and Sweden.....	1.102 pounds.
Quarter.....	Great Britain.....	8.252 bushels.
Do.....	London (coal).....	36 bushels.
Quintal.....	Argentine Republic.....	101.42 pounds.
Do.....	Brazil.....	130.06 pounds.
Do.....	Castile, Chile, Mexico, and Peru.....	101.61 pounds.
Do.....	Greece.....	123.2 pounds.
Do.....	Newfoundland (fish).....	112 pounds.
Do.....	Paraguay.....	100 pounds.
Do.....	Syria.....	125 pounds.
Do.....	Metric.....	220.46 pounds.
Rottle.....	Palestine.....	6 pounds.
Do.....	Syria.....	5¾ pounds.
Sagen.....	Russia.....	7 feet.
Salm.....	Malta.....	490 pounds.
Se.....	Japan.....	0.02451 acres.
Seer.....	India.....	1 pound 13 ounces.
Shaku.....	Japan.....	11.9305 inches.
Sho.....	do.....	1.6 quarts.
Standard (St. Petersburg).....	Lumber measure.....	165 cubic feet.
Stone.....	British.....	14 pounds.
Suerte.....	Uruguay.....	2,700 cuadras (see cuadra).
Sun.....	Japan.....	1.193 inches.
Tael.....	Cochin China.....	590.75 grains (troy).
Tan.....	Japan.....	0.25 acre.
To.....	do.....	2 pecks.
Ton.....	Space measure.....	40 cubic feet.
Tonde (cereals).....	Denmark.....	3.94783 bushel.
Tondeland.....	do.....	1.36 acres.
Tsubo.....	Japan.....	6 feet square.
Tsun.....	China.....	1.41 inches.
Tunna.....	Sweden.....	4.5 bushels.
Tunnland.....	do.....	1.22 acres.

Foreign weights and measures, with American equivalents—Continued.

Denominations.	Where used.	American equivalents.
Vara.....	Argentine Republic.....	34.1208 inches.
Do.....	Castile.....	0.914117 yard.
Do.....	Central America.....	22.87 inches.
Do.....	Chile and Peru.....	23.367 inches.
Do.....	Cuba.....	33.384 inches.
Do.....	Curacao.....	33.375 inches.
Do.....	Mexico.....	33 inches.
Do.....	Paraguay.....	34 inches.
Do.....	Venezuela.....	33.384 inches.
Vedro.....	Russia.....	2.707 gallons.
Vergees.....	Isle of Jersey.....	71.1 square rods.
Verst.....	Russia.....	0.663 mile.
Vloeka.....	Russian Poland.....	41.98 acres.

METRIC WEIGHTS AND MEASURES.

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
 Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
 Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
 Gram equals 15.432 grains.
 Decagram (10 grams) equals 0.3527 ounce.
 Hectogram (100 grams) equals 3.5274 ounces.
 Kilogram (1,000 grams) equals 2.2046 pounds.
 Myriagram (10,000 grams) equals 22.046 pounds.
 Quintal (100,000 grams) equals 220.46 pounds.
 Millier or tonne—ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measures.

Milliliter ($\frac{1}{1000}$ liter) equals 0.061 cubic inch.
 Centiliter ($\frac{1}{100}$ liter) equals 0.6102 cubic inch.
 Deciliter ($\frac{1}{10}$ liter) equals 6.1022 cubic inches.
 Liter equals 0.908 quart.
 Decaliter (10 liters) equals 9.08 quarts.
 Hectoliter (100 liters) equals 2.838 bushels.
 Kiloliter (1,000 liters) equals 1.308 cubic yards.

Metric liquid measures.

Milliliter ($\frac{1}{1000}$ liter) equals 0.0388 fluid ounce.
 Centiliter ($\frac{1}{100}$ liter) equals 0.338 fluid ounce.
 Deciliter ($\frac{1}{10}$ liter) equals 0.845 gill.
 Liter equals 1.0567 quarts.
 Decaliter (10 liters) equals 2.6418 gallons.
 Hectoliter (100 liters) equals 26.417 gallons.
 Kiloliter (1,000 liters) equals 264.18 gallons.

Metric measures of length.

Millimeter ($\frac{1}{1000}$ meter) equals 0.0394 inch.
 Centimeter ($\frac{1}{100}$ meter) equals 0.3937 inch.
 Decimeter ($\frac{1}{10}$ meter) equals 3.937 inches.
 Meter equals 39.37 inches.
 Decameter (10 meters) equals 393.7 inches.
 Hectometer (100 meters) equals 328 feet 1 inch.
 Kilometer (1,000 meters) equals 0.62137 mile (3,280 feet 10 inches).
 Myriameter (10,000 meters) equals 6.2137 miles.

Metric surface measures.

Centare (1 square meter) equals 1,550 square inches
 Are (100 square meters) equals 119.6 square yards.
 Hectare (10,000 square meters) equals 2.471 acres.

EXPLANATORY.

The edition of "Highways of Commerce," issued in 1895, having been exhausted, it was decided, in view of the continuing demand, to reprint it with supplementary reports from consular officers showing the changes in transportation facilities and conditions in their districts since that year. These reports have been printed from time to time in the various publications of the Bureau of Foreign Commerce, and are now brought together in one volume. The chart "Tracks for Full-Powered Steam Vessels" is a new edition issued by the Hydrographic Office, Navy Department, in August, 1899.

HIGHWAYS OF COMMERCE.

On the 10th of April, 1894, the Department of State sent a circular to consular officers instructing them to prepare reports on the great through lines of traffic, by land and water, in their districts. The circular said:

In case of statements for an entire year, the calendar year 1893 should be preferentially covered.

No traffic line need be mentioned unless it carries passengers, through mails, or freight in very considerable quantities, the purpose of these reports being to supply to American merchants, travelers, and students authentic information concerning the great highways of traffic and travel. Neither subsidiary lines nor military lines, as such, need be discussed.

The great through lines should be reported upon under the heads, "Ocean lines" (including great coastwise lines), "Railways," "Navigable rivers and canal lines," and "First-class highways" (paved or macadamized).

The following interrogatories indicate the kind and the extent of the information desired:

1. Who controls the respective lines (government, corporations, etc.)?
2. What are the termini and the main points touched?
3. What is the length of the total line, and what are the distances between main points?
4. What is the condition of the line?
5. What (in the case of ocean lines and important coast, river, and canal lines) is the number of vessels; what their size and power?
6. What (in the case of railways) is the number of tracks?
7. What (in the case of highways) is the width?
8. How frequent is the communication on each line?
9. What are the rates (first class) for passengers, and for freight by the ton or kilogram, both between termini and intermediate points? Reserve terminal charges (so called) for future treatment, but report on through traffic and short hauls.

Roads overcoming great obstacles (by grade, bridges, etc.) should be specially mentioned, and accurate historical notes upon important highways would be appreciated.

The following reports in answer to the circular had been received up to July 10, 1895. In cases where no replies to the circular were forthcoming, or where it was impossible to obtain original information, owing to the fact that no consular representatives of the United States were stationed in the localities described, such matter as was procurable has been given, the sources being indicated either by footnotes or in the body of the text.

RAILWAYS AND TELEGRAPHS OF THE WORLD.

I. RAILWAYS.

The minister of public works for the German Empire has recently published the annual Railway Record. The statistics are based upon facts existing on December 31, 1892. At that date, the total length of all the railways of the world amounted to 406,348½ miles, or more than sixteen times the circumference of the earth at the equator.

In the apportionments by continents, America occupies first rank with 218,871½ miles, or 31,394½ miles more than the remainder of the world. Europe has 144,359 miles of railway, while Asia, notwithstanding its immense size, counts only 23,219½ miles. Africa has 7,212½ miles, and Australia 12,685 miles of iron road.

The following table gives the figures for various European countries:

Countries.	Length of railways, in miles.	Miles of railway per 100 square miles.	Miles of railway per 10,000 inhabitants.
Germany.....	27,461	13.084	5.45
Austria-Hungary.....	17,621	7.313	4.44
Great Britain and Ireland.....	20,321	16.778	5.14
France.....	24,014	11.229	6.26
Russia.....	19,622	.936	2.06
Italy.....	8,496	7.678	2.74
Belgium.....	3,379	20.710	5.45
Spain.....	6,769	3.456	3.93

The other countries of Europe combined have a total of 16,655½ miles of road, making a total of 144,359 miles, as already stated, for all Europe, with a proportion of 3.829 miles per 100 square miles, and of 4.22 miles per 10,000 inhabitants.

Of the 218,871½ miles opened in America, the United States alone possesses 174,747 miles,¹ with a proportion of 4.913 miles per 100 square miles, and of 25.12 miles per 10,000 inhabitants. Next come Canada and the British Provinces with 14,866 miles, or 0.436 mile per 100 square miles, and 30.66 miles per 10,000 inhabitants. There are in Mexico 6,624 miles of railway; in Brazil, 6,388 miles, and in the Argentine Republic, 8,161½ miles.

¹ Poor's Manual of Railroads gives the mileage of railways in the United States as 175,204 and 177,753 miles, at the close of the calendar years 1892 and 1893, respectively. The Statistician and Economist, for 1895-96, gives the railway mileage of the United States at the close of the calendar year 1894 as 189,576, and the total mileage of the world at 423,923.

Of the 23,219 miles of railway in Asia, 17,715 miles are located in the British East Indies. In Africa, the French possessions have 1,984 miles and Cape Colony 2,443½ miles.

The financial statistics relative to the subject are interesting. It is estimated that these 406,348½ miles of railway have cost \$33,655,340,000, which makes the average cost per mile \$82,823.73. The total length of European railways has cost \$17,505,100,000, being an average cost of \$121,260.88 per mile.

In the countries about to be mentioned, the average price per mile has been as indicated by the following table, which also gives the total amount invested in railways:

Countries.	Average cost per mile.	Total amount invested in railways.
France.....	\$131,859.96	\$3,186,485,079.44
Great Britain and Ireland.....	131,047.76	2,063,021,530.96
Belgium.....	130,984.08	442,585,206.32
Italy.....	114,593.99	973,590,539.04
Austria-Hungary.....	85,391.47	1,090,893,092.87
Germany.....	95,194.23	2,613,176,807.73
Russia.....	90,414.18	1,756,107,039.96

The 261,989½ miles of the other portions of the globe represent a total sum of \$16,152,170,000, with an average cost of \$61,651.85 per mile. The cheapest railways are in Australia, where, in the western portion, the price falls as low as \$21,723 per mile.

The United States share in the figures above mentioned to the amount of \$10,362,170,000, with an average cost per mile of \$59,298.12.

The total cost for Canada has been \$856,148,000, or an average of \$57,591 per mile.

2. TELEGRAPHS.

Another authority gives the total length of telegraph wires as 1,062,543 miles,¹ of which 380,278 miles are in Europe, 545,625 in America, 67,481 in Asia, 21,562 in Africa, and 47,535 miles in Australia.

The United States has the largest number of miles of wires, there being 403,891 miles, or more than the total for all Europe.

The following statement shows the mileage by countries:

	Miles.		Miles.
United States	403,891	Canada	32,311
Russia	80,778	Italy	24,233
Germany.....	73,322	Turkey	20,505
France.....	59,652	Argentine Republic	18,641
Austria-Hungary	42,999	Spain	16,158
British East Indies.....	39,146	Chile	15,845
Mexico.....	37,904	Belgium	4,624
United Kingdom	34,175		

¹The Statistician and Economist, for 1895-96, gives the following telegraphic figures: Total telegraph lines of the world, 904,701 miles; total miles of wire, 2,682,583. Total miles of telegraph in the United States at the close of 1894, 190,303; total miles of wire in the United States, 790,792.

HIGHWAYS OF COMMERCE.

Divisions and countries.	Number of miles per 100 square miles.	Number of miles per 10,000 inhabitants.	Divisions and countries.	Number of miles per 100 square miles.	Number of miles per 10,000 inhabitants.
The world.....	* 2. 06	0. 708	COUNTRIES—continued.		
DIVISIONS.			Great Britain and Ireland	28. 217	8. 544
Europe.....	10	10. 870	Italy.....	21. 899	7. 573
America.....	3. 495	49. 692	Austria-Hungary.....	17. 846	10. 238
Asia.....	. 332	. 848	Turkey.....	16. 274	12. 612
Africa.....	. 187	1. 047	United States.....	11. 354	62. 137
Australia.....	1. 359	15. 845	Spain.....	8. 237	8. 976
COUNTRIES.			Chile.....	6. 169	62. 727
Belgium.....	40. 622	7. 700	Mexico.....	5. 046	34. 458
Germany.....	34. 946	14. 664	British Indies.....	4. 534	1. 957
France.....	29. 228	14. 913	Russia.....	3. 572	8. 593
			Argentine Republic.....	1. 702	46. 602
			Canada.....	. 932	53. 852

*Only land surfaces are considered in obtaining this result; in the subsequent calculations, all the larger bodies of water have been excluded.

HENRY C. MORRIS,

Consul.

GHENT, November 26, 1894.

NORTH AMERICA.

DOMINION OF CANADA.

INTRODUCTORY.¹

Canada has a system of canal, river, and lake navigation over 2,700 miles in length, and vessels from the lake ports reach the Atlantic without breaking bulk. Up to 1891, \$61,000,000 had been spent on canals for construction alone. In 1892, 25,105 vessels, of 4,273,760 tons, passed through the Canadian canals, carrying 152,439 passengers and 3,031,736 tons of freight, chiefly grain, timber, and coal.

The Dominion of Canada had a network of railways of a total length of 15,320 miles completed at the end of June, 1893, being a considerable increase over that of 1891. The number of miles in operation was 15,020. A considerable extent of railway is in course of construction, and concessions have been granted by Government for upward of 4,000 miles more. The Canadian Pacific Railway main line, from Montreal to Vancouver, is 2,906 miles in length. By means of this railway and a line of Pacific steamers, subsidized by the Imperial and Dominion Governments, Montreal and Yokohama have been brought within fourteen days of one another, and the journey from Liverpool to Yokohama is accomplished in less than twenty-one days. An experimental service has also been established between Australia and British Columbia, the first steamer, the *Miwera*, arriving at Vancouver from Sydney, New South Wales, on June 8, 1893, with mails, passengers, and freight.

The traffic on Canadian railways in 1892 and 1893 was:

Year.	Miles of railway.	Passengers.	Tons of freight carried.	Receipts.	Expenses.	Net profits.	Capital paid up.
1892	14, 588	13, 533, 414	22, 189, 923	\$51, 685, 768	\$36, 488, 228	\$15, 197, 540	\$844, 991, 750
1893	15, 020	13, 618, 027	22, 003, 599	52, 042, 397	36, 616, 033	15, 426, 364	872, 156, 476

In 1893, of the capital paid up, \$147,212,610 represented Federal Government aid, and \$42,148,313 aid from provincial governments and municipalities.

On June 30, 1893, there were 8,437 post offices in the Dominion. A uniform rate of postage of 3 cents has been established over the whole Dominion. The number of money-order offices in Canada in 1893 was

¹ From the Statesman's Year Book for 1895.

1,168. Since confederation, in 1867, the number of offices has doubled, and the number of orders sent is more than eight times as many.

There were 31,841 miles (2,709 being Government) of telegraph lines in Canada in 1893, and 69,111 miles of wire, with 2,692 offices. There were, in 1893, 44,000 miles of telephone wires, and 33,500 sets of instruments.

THE CANAL SYSTEM OF CANADA.¹

The St. Lawrence River, and the Great Lakes, whose waters flow through it into the Atlantic, form a continuous waterway extending from Fond du Lac, at the head of Lake Superior, to the straits of Belle Isle, a distance of 2,384 miles. Along its course, at convenient distances, is abundant water power, and in its numerous bays and inlets are safe and commodious harbors.

Emptying into the St. Lawrence and contributing to the volume of its waters, as well as to the importance of its trade, are the Ottawa and Richelieu rivers, the former bringing it into communication with the immense lumber forests of Ontario, and the latter connecting it with Lake Champlain in the United States. These rivers were the thoroughfares in peace and the base lines in war for the Indian tribes long before the white man appeared on the Western Hemisphere. Upon their broad bosoms, the first explorers and voyagers pushed their adventurous way into the heart of this northern country, and opened it to commerce and civilization.

The early colonists of Canada found them the convenient and almost the only channels of intercourse among themselves and with the home country. Supplies were brought up the St. Lawrence in seagoing vessels to Quebec and Montreal, and thence distributed to the scattered settlements throughout the country.

Indian canoes, richly laden with furs and pelts, and later, batteaux and Durham boats, freighted with the surplus grain of the colonists, and lumber rafts from the Upper Ottawa and the lakes, floated down the Ottawa and the St. Lawrence to Montreal, Three Rivers, and Quebec, where their cargoes were exchanged for the comforts and necessaries of life brought from France. The St. Lawrence was navigable for seagoing vessels as far as Montreal, but between Montreal and the foot of Lake Ontario, there was a succession of rapids separated by navigable reaches. On account of the rapidity of the current, these rapids are impassable to boats of any size ascending the river, but most of them can be passed on the downward trip by vessels not too heavily loaded and built strongly enough to resist the strain of the whirling waters.

The head of navigation on the Ottawa River is the city of Ottawa, now the capital of the Dominion, but formerly known as Bytown.

¹ Extracts from report by Consul-General Stearns, of Montreal, printed in Consular Reports, No. 42, June, 1884. Reprinted in Special Consular Reports, "Canals and Irrigation," 1891.

Between this city and the mouth of the river at the southern extremity of the Island of Montreal, there are several impassable rapids.

The Richelieu, which is, as I have said, the outlet of Lake Champlain, was also so much obstructed at various points as to be unavailable for navigation.

A list of the various rapids on the St. Lawrence, Ottawa, and Richelieu, with a statement showing their length and that of the navigable reaches between them, will be found in Appendices A, B, and C.

The canal system of Canada, both in its entirety and its separate parts, has been established to overcome these obstructions, and, by artificial channels at various points, to render freely navigable the natural routes of transportation. By means of it, the whole St. Lawrence system, from Lake Erie to the sea, has been made passable by a connecting chain of canals, comprising 71½ miles of artificial navigation, the least depth of which is 9 feet; a line of communication established between the St. Lawrence at Montreal and Lake Ontario at Kingston, by way of the Ottawa and the Rideau River, and a passage opened from the St. Lawrence to Lake Champlain and the United States.

APPENDIX A.—Table of distances, sections of navigation, and obstructions on the St. Lawrence route.

From—	To—	Sections of navigation.	Distance.	Obstructions.
			<i>Miles.</i>	
Montreal	Lachine	Lachine Canal	8½	Lachine Rapids.
Lachine	Melocheville	Lake St. Louis	15½	
Melocheville	Valleyfield	Beauharnois Canal	11½	Cascades, Coteau and Cedar Rapids.
Valleyfield	Cornwall	Lake St. Francis	32½	
Cornwall	Dickinsons Landing	Cornwall Canal	11½	Long Sault Rapids.
Dickinsons Landing	Farrans Point	River St. Lawrence	5	
Farrans Point	Croyles Island	Farrans Point Canal	¾	Rapids.
Croyles Island	Morrisburg	River St. Lawrence	10½	
Morrisburg	Rapide Plat	Rapide Plat Canal	4	Rapide Plat Rapids.
Head of Rapide Plat	Iroquois Village	River St. Lawrence	4½	
Iroquois Village	Galops Rapids	Galops Canal	7½	Galops Rapids.
Head Galops Rapids	Prescott	River St. Lawrence	7½	
Prescott	Kingston	River St. Lawrence	59	
Kingston	Port Dalhousie	Lake Ontario	170	
Port Dalhousie	Port Colborne	Welland Canal (old)	27	Niagara River and Falls.
Port Dalhousie	Port Colborne	Welland Canal (enlarged)	26½	

APPENDIX B.—Table of distances, sections of navigation, and obstructions on the Montreal, Ottawa and Kingston route.

From—	To—	Sections of navigation.	Distance.	Obstructions.
			<i>Miles.</i>	
Montreal	Lachine	Lachine Canal	8½	
Lachine	St. Anne's Canal	Lake St. Louis	14½	
Foot of St. Anne's Canal and lock	Head of St. Anne's Canal and lock	St. Anne's Canal	½	St. Anne's Rapids.
Head of St. Anne's Canal and lock	Foot of Carillon Canal	Lake of Two Mountains and River Ottawa	27	
Foot of Carillon Canal	Head of Carillon Canal	Carillon Canal	¾	Carillon Rapids.
Head of Carillon Canal	Grenville Canal	River Ottawa	6½	
Foot of Grenville Canal	Head of Grenville Canal	Grenville Canal	5½	Long Sault Rapids.
Head of Grenville Canal	Ottawa City	River Ottawa	56	
Ottawa City	Kingston	Rideau Canal	126½	Rapids and shallows and falls.

APPENDIX C.—Table of distances, sections of navigation, and obstructions on the Lake Champlain route.

From—	To—	Sections of navigation.	Dis- tance.	Obstructions.
Montreal	Sorel	River St. Lawrence.....	<i>Miles.</i> 46	
Sorel	St. Ours	River Richelieu.....	14	
St. Ours		St. Ours lock and dam		St. Ours Rapids.
St. Ours Lock	Chambly Basin	River Richelieu.....	32	
Chambly Basin	St. Johns	Chambly Canal	12	Chambly Rapids.
St. Johns	Rouse Point.....	River Richelieu.....	23	

APPENDIX D.—Table showing length of each canal, number and dimensions of locks, and dimensions and tonnage of vessels which can pass them.

Canals.	Length.	No. of locks.	Lockage.	Locks.			Vessels passing through.			Tonnage.
				Length.	Breadth.	Depth.	Length.	Breadth.	Draft.	
Lachine.....	<i>Miles.</i> 8½	5	<i>Feet.</i> 45	270	45	12	250	44	12	1,000 to 1,500
Beauharnois.....	11½	9	82½	200	45	9	180	44	9	700
Cornwall.....	11½	7	48½	200	55	9	180	54	9	750
Williamsburg.....	12½	6	29½	200	45	9	180	44	9	800
Welland (new).....	26½	26	326½	270	45	12	250	44	12	1,000 to 1,500
St. Ours lock.....		1	5	200	45	7	180	44	7	600
Chambly.....	8	9	74	118	23½	7	110	23	6½	230
St. Anne's lock.....		1	2	200	45	9	180	44	9	700
Carillon.....		2	12½	200	45	9	180	44	9	700
Grenville.....	5½	5	45½	200	45	9	180	44	9	700
Rideau.....	126½	47	(¹)	134	33	5	120	31½	4½	250

¹ Rise, 282½; fall, 164; total, 446½.

NOTE.—The depth given is the average depth at low water. When the water is unusually low this depth can not be maintained, and the capacity of the canals is reduced.

CANAL DEVELOPMENT.¹

Previous to confederation, the canals in Canada were owned by the provincial governments.

In 1867, the union of the provinces was effected and they became the property of the Dominion Government, subject to the control of the department of inland revenue, but their construction, maintenance, and repairs are provided for by the department of railroads and canals. The St. Lawrence and Welland Canal systems, in conjunction with the Sault Ste. Marie Canal and the Great Lakes, give an unbroken water communication from Duluth via Montreal to Liverpool, a distance of 4,618 miles, of which 71 miles are artificial navigation.

In 1841, the system of canals between Montreal and Lake Ontario was contemplated with a view of securing a depth of 9 feet at all stages of the St. Lawrence waters.

The St. Lawrence River, however, is from various causes subject to fluctuations, the extent of which it seems was not determined with precision at the time when the canals were originally constructed.

¹ Report by Commercial Agent Leishman, of Morrisburg, printed in Special Consular Reports, "Canals and Irrigation," 1891.

The observations and experience of subsequent years have proven that while the intermediate river affords a sufficient depth for vessels drawing 9 feet, in the canals themselves at certain periods of low water that depth can not be maintained, the bottom not having been sunk to an adequate low depth.

The Dominion canals constructed between Montreal and Lake Erie are the Lachine, Beauharnois, Cornwall, Farrans Point, Rapide Plat, Galops, and Welland. The aggregate length of these canals is 70½ miles, the total height overcome by locks is 533½ feet, and the number of locks is fifty-three. The greatest navigable depth is 14 feet, and that at present is to be found only in the Welland Canal, which was opened for the first time for 14-foot navigation during the season of 1888.

In the year 1871, it was decided by the Dominion Government to enlarge the canals on the St. Lawrence route, and it was subsequently determined that such a depth should be secured as would accommodate vessels of 14 feet draft. In conformity with this scheme of enlargement, all permanent structures, such as locks, bridges, etc., which are being built are required to be of such proportions as will accommodate vessels of 14 feet draft. The new locks are 270 feet long between the gates, 45 feet wide, and with a clear depth of 14 feet of water on the sills. The walls are of dressed stone, backed up with large, flat-bedded stones, and laid throughout in hydraulic cement. The face stones are laid in regular courses, the thickest course being at the bottom and diminishing upward in regular succession. The foundation timbers are pine, 12 inches square, and covered with two thicknesses of planks.

Lachine Canal.—The Lachine Canal is located on the northern side of the St. Lawrence River. It extends from the city of Montreal to the village of Lachine, and was constructed to overcome the St. Louis rapids. It is 8½ miles in length, has five locks, and a total lockage or rise of 45 feet. Its mean width is 150 feet. It consists of one channel, with two distinct systems of locks, the old and the enlarged. Its present navigable depth is 12 feet, but with the excavation of the canal prism to a further depth of 2 feet, it will accommodate vessels of 14 feet draft. A portion of this canal is lighted by electricity. Its construction consists of the excavation of earth and rock, and the manner of letting the work is by public tenders. The work on this canal was commenced in 1821, and the first vessel passed through it in 1825.

Beauharnois Canal.—This canal commences 15½ miles west from the head of the Lachine Canal. It is on the south side of the St. Lawrence River and connects Lakes St. Louis and St. Francis, and passes the three rapids known, respectively, as the Cascades, the Cedars, and the Coteau. Its length is 11½ miles, the number of locks is nine, and their dimensions are the old size—200 feet long and 45 feet in width. The total rise or lockage overcome is 82½ feet; the navigable depth is 9 feet; the breadth of the canal bottom is 80 feet, and its breadth at the water surface is 120 feet. Opened in October, 1845, for navigation.

Cornwall Canal.—The Cornwall Canal was commenced in 1834 and opened for navigation in 1842. It is situated on the north side of the St. Lawrence, opposite the village of Cornwall, and commences 32½ miles from the head of the Beauharnois Canal. It extends past the Long Sault Rapide. It is the longest canal on the St. Lawrence, being 11½ miles in length, has six locks, two of which are of the new or enlarged size. The total rise or lockage overcome is 48 feet. The navigable depth is 9 feet. Its breadth at the bottom is 100 feet and at the water surface 150 feet. Four new locks are under contract and are now [1889] in the actual course of construction, together with the supply weirs and bridges, also the enlarging and deepening of the canal prism. Its water is utilized for motive power by varied and extensive manufacturing industries. This canal was formed by excavation and crib work.

Williamsburg Canals.—The Farrans Point, Rapide Plat, and Galops canals are collectively known as the Williamsburg Canals. They are situated on the north shore of the St. Lawrence River and were constructed to overcome certain rapids, the names of which they bear. They were formed by cutting through projecting points, and with the material removed inclosing bays and indents in the shore line, making a continuous range of bank between the river and the canal. Wherever required by the swiftness of the current, the depth of water, or other circumstances, the bank is made solid by a line of rough crib work, and along the outer side of the bank as well as the two inner sides of the canal a wall of broken stone has been built to prevent the washing of the sides. The channel is 50 feet wide at the bottom, with side slope of 2 horizontal to 1 vertical. The breadth of the canal is 90 feet at the surface of the water and it is navigable for vessels of 9 feet draft.

The Farrans Point Canal is the first of the division in ascending the river. It commences 5 miles from the head of the Cornwall Canal. It was opened in 1847, is three-fourths of a mile in length, has one lock, with a lockage or total rise of 4 feet. Its banks vary from 15 to 38 feet high over the water surface.

Rapide Plat Canal is the second of the series and is located opposite the village of Morrisburg. It commences 10½ miles from the head of Farrans Point Canal. It was first opened for navigation in September, 1847. It is 4 miles in length, has two locks, and a total rise or lockage of 11½ feet. The enlargement of this canal in conformity with the proportions of the general scheme has been commenced.

The Galops Canal commences 4½ miles from the head of Rapide Plat Canal. It is 7½ miles in length, has three locks, and a total rise or lockage of 15¾ feet. It was first opened October, 1847. The new work completed on this canal consists of the deepening of a channel way at upper end, greatly facilitating access to the canal.

Welland Canal.—The Welland Canal connects Lake Erie with Lake Ontario. It is 26¾ miles in length, extending from Port Colborne to Port Dalhousie. It has twenty-six locks and a total rise or lockage of

326½ feet. Its construction was commenced by an incorporated company. The first sod was turned November 30, 1824. The company's financial resources proved inadequate to the large outlay that was necessary to maintain the canal in the efficient condition its importance required, and in 1841 an act was passed authorizing its purchase by the Government. This canal was opened for navigation in 1841. It has gone through several subsequent changes, the tendency of which has been to greatly increase its depth and dimensions.

THE SAULT STE. MARIE CANAL.

A press dispatch from Sault Ste. Marie, Ontario, gives the following account of the opening, on the 13th of June, 1895, of the Sault Ste. Marie Canal, connecting the waters of Lake Superior with those of Lake Huron by a route on the Canadian side, avoiding the rapids of the strait:

It was expected that a large delegation of ministers and members of the Canadian Parliament would be here to-day to join in celebrating the opening of the new Canadian canal, but as members in both sides of the house were opposed to breaking in on the time of Parliament when so many were anxious to get home, the idea was abandoned.

There were no speeches or parades or other ceremonies incident to the opening. The canal will not have an available draft at present of more than 14 feet on account of bowlders in the channel. It will take a month yet to remove all obstructions.

The contracts for the canal and lift locks were let in November, 1888, and those for the entrance works in January, 1889. Water was first admitted to the lock September 25, 1894. The total length of the canal across St. Marys Island is 4,000 feet, or from eastern to western extremities of the piers about 8,000 feet. With the approaches, the total distance is about 3½ miles. The lock chamber is 900 feet long, 60 feet wide, with depth of water sufficient to pass vessels of 20 feet draft at the lowest recorded stage of water below the lock. The lock fills in nine minutes and can be emptied in seven and one-half minutes.

The canal proper has a surface width at low-water level of 152 feet, and a bottom width of 145 feet. At a point about 1,500 feet above the lock it is crossed by a swing-bridge over which the railway systems of Canada and the United States find accommodation. The works altogether cost about \$4,000,000.

The New York Journal of Commerce of June 17, 1895, says:

On Thursday the Canadian canal at the falls of St. Marys River, the outlet of Lake Superior, was opened, and it affords to navigation much greater facilities than the canal on the American side which is now in use, but the American canal which will be opened next year will in its turn surpass the Canadian canal in general capacity, though the Canadian canal will remain superior in two dimensions. These canals and their locks may be spoken of interchangeably, because in each case the canal consists simply in the lock and the channels approaching it. It is only fourteen years since the present American canal was opened, and yet the growth of the lake commerce was so rapid that the construction of a new lock was begun six years ago. The inadequacy of the lock now in use became apparent before it was opened for commerce, but when it was projected a lock 515 feet long and carrying 17 feet of water on the sills in a favorable stage of water seemed likely to respond to all demands upon it for many years to come.

The Canadian lock, which in rapidity of construction has outstripped ours, is 900 feet long, 60 feet wide and 22 feet deep. Of our new lock, the masonry work is completed, and all the gates will be completed this summer, but nearly a year's work

remains on the approaches. The lock is 800 feet long, 100 feet wide, and a steamer drawing 21 feet of water can pass through it. Though shorter than the Canadian lock, its superficial area is 80,000 feet, and that of the Canadian canal 54,000 feet. The American canal lock will accommodate four of the largest lake steamers at the same time. The depth of the lock is as great as there will be any occasion for until the lake ports generally are deepened. The two largest and finest passenger steamers on the lakes, the *Northwest*, which was put on the route last year, and the *North Land*, which has begun her career this year, and which compare not unfavorably with Atlantic passenger steamers, excepting a very few of the champion racers, draw, we believe, but 17 feet of water. It seems unlikely at present that steamers drawing more than 21 feet will ever be desired on the lakes.

The net registered tonnage passing through the St. Marys Falls Canal in 1885 was but a trifle more than 3,000,000 tons, and the average tonnage of vessels was 602 tons; in 1894, in spite of the dullness in the ore trade in the early part of the year, the tonnage of the canal exceeded 13,000,000 tons, and the average tonnage of vessels passing through had increased to 944 tons. The net tonnage that passed through the Suez Canal in 1894 was but a trifle over 8,000,000 tons. The number of passengers carried through the St. Marys Canal in 1894 was 14,491, compared with 3,352 through the Suez Canal. The aggregate tonnage of all domestic and foreign steam and sailing vessels that entered from or cleared for foreign countries at all ports of the United States in 1894 was only a little more than 15,000,000 tons, or a little more than 2,000,000 tons in excess of the tonnage of vessels that passed through the lock of the St. Marys Canal.

UNITED STATES AND CANADIAN CANAL COMMISSION.

In the sundry civil appropriation bill, the Fifty-third Congress, third session, 1895, provided that the President of the United States be authorized to appoint three persons who should have the power "to meet and confer with any similar committee which may be appointed by the Government of Great Britain or of the Dominion of Canada, and who shall make inquiry and report whether it is feasible to build such canals as shall enable vessels engaged in ocean commerce to pass to and fro between the Great Lakes and the Atlantic Ocean, with an adequate and controllable supply of water for continual use; where such canals can be most conveniently located, the probable cost of the same, with estimates in detail; and if any part of the same should be built in the territory of Canada, what regulations or treaty arrangements will be necessary between the United States and Great Britain to preserve the free use of such canal to the people of this country at all times; and all necessary facts and considerations relating to the construction and future use of deep water channels between the Great Lakes and the Atlantic Ocean." Writing of this project from Ottawa, under date of June 11, 1895, a correspondent of the *New York Evening Post* says:

The Dominion Government is about to appoint a departmental commission for the same purpose, and it is expected that the two bodies will meet, and, if possible, arrive at a common plan. An international convention, held at Toronto last fall, recommended that the route should be deepened to 21 feet and a canal of the same depth constructed from the St. Lawrence to the Hudson, either by way of the Mohawk or by enlarging the existing channel of the Richelieu River and Champlain Canal, the whole work to be done at the joint expense of the United States and Canada

and to be subject to their joint control. This convention was the outcome of smaller conventions at Grand Forks and elsewhere in the Northwestern States.

Canada has spent about \$50,000,000 on the St. Lawrence route to secure a 14-foot channel. From the Strait of Belle Isle to Duluth is 2,385 statute miles, of which 72 are artificial and 2,313 open navigation. From Belle Isle to Liverpool is 2,234 statute or 1,942 geographical miles. The artificial navigation can be deepened to 21 feet for about \$30,000,000. The cost of enlarging the Richelieu and Champlain route to connect Montreal with Albany and New York City is not accurately known, nor has any estimate been formed of the cost of building a canal by the Mohawk. Some engineers recommend that instead of going by the Mohawk or the Richelieu it would be better to build a canal from Caughnawaga, opposite Montreal, to Lake Champlain. The entire project is still in the nebulous form, though all agree that it would be a great thing for the Northwest to have a deep-water line to New York and New England as well as to Liverpool.

The navigation of the Gulf of St. Lawrence was made free to both nations by the treaty of 1783, that of the River St. Lawrence by the Washington treaty of 1871. But the key to the navigation of the river lies in the Canadian canals between Montreal and Kingston, and between Lake Ontario and Lake Erie. The Welland Canal, joining these two lakes, is 14 feet deep and the lower canals will soon be that depth; at present their greatest depth is 9 feet. The fleet of large steamers, 300 in number, plying west of Buffalo, is thus literally shut up in the upper lakes; in other words, the St. Lawrence route to tidewater is available only to the smaller lake craft, and till a depth of 21 feet is obtained from end to end the cost of transportation can not be materially reduced.

The Dominion is not in a position to sink much more money in canals or anything else, its net debt being already \$50 per head. Canadians think, moreover, that as the United States would profit fully as much as themselves from a 21-foot channel between Montreal and Duluth, the United States should help to foot the bill. It is said that with that depth in the canals wheat could be sent from Duluth to Liverpool for 10 cents a bushel. But the principal gain, perhaps, would be in the cheapening of transportation between the Northwestern and Eastern States, food products going one way and manufactures the other. It is also assumed that the low rates on this route, open seven months in the year, would tend to reduce rates on all lines of railroad south of it connecting the Western States with the Atlantic. The distance from Montreal to New York by the Richelieu River and Champlain Canal is 457 miles, of which 372 are open and 85 artificial navigation. The lockage upward from the St. Lawrence at Sorel to the summit-level of the Champlain Canal is 136 feet, and from the summit down to Albany 150 feet. Mr. L. E. Cooley, the Chicago engineer, advocates a 21-foot channel from Chicago to the Gulf of Mexico as part and parcel of the St. Lawrence scheme.

BRITISH COLUMBIA.

OCEAN LINES.

Victoria, British Columbia, from its location and its natural relation to coastwise and transpacific lines, is a growing center of travel and traffic, and of necessity, will always remain so. It lies directly in the way of all the north and south Pacific Coast lines, both rail and water, and of all the lines from the Orient which strike the American continent north of San Francisco. It is the first and last port touched by

deep sea vessels coming and going from all that part of the globe where extreme west meets extreme east.

Six principal steamship lines touch at this port at present, or make it one of their termini. The great through lines of traffic are: Canadian Pacific Steamship Company, Canadian and Australian Steamship Company, Northern Pacific Steamship Company, Pacific Coast Steamship Company, Puget Sound and Alaska Steamship Company, Canadian Pacific Navigation Company. In addition to these lines are the Esquimalt and Nanaimo Railway; the steamship line from Victoria to Comox, and the line to New Westminster and other points on the Fraser River.

Canadian Pacific Navigation Company Line.—The vessels of this line are the *Empress of China*, the *Empress of India*, and the *Empress of Japan*. They run in connection with the Canadian Pacific Railway, making Vancouver the American terminus, and Hongkong the Asiatic terminus. These ships are of about 6,000 tons register, 10,000 horsepower, 485 feet long, 51 beam, 36 below hatches, and are fitted for both passengers and freight. They are new, having been built at Barrow, England, in 1891; are in excellent condition, and can accommodate 180 first class, 200 second class, and 1,000 steerage passengers. The ocean is crossed in thirteen to fourteen days, and trips are made once in three weeks.

The distance from Vancouver to Yokohama is 4,283 miles; fare (first class), one way, \$200; round trip, \$300.

Distance from Vancouver to Hongkong, 6,140 miles; fare (first class), one way, \$225; round trip, \$325.

Freights are difficult to quote, owing to classification, quality, etc. They run from \$5 to \$50 per ton, through rates.

Canadian and Australian Line.—This line was opened in 1893, the first trip being made by the *Miowera*, since then disabled and returned to England for repairs. The vessels now in service are the *Warrimoo* and *Arawa*. They are of 5,000 tons register, thoroughly seaworthy, of good power, and well fitted for both passenger and freight business. The terminal points are Vancouver and Sydney, touching at Honolulu and Suva en route. The distances are: Vancouver to Honolulu, 2,410 miles; Vancouver to Sydney, 6,824 miles. Fare to Honolulu (first class), \$75; to Suva or Sydney, \$200. The steamers stop at Victoria going and coming, landing at the outer wharf. They also make stops of several hours at Honolulu and Suva. Through freight rates run from \$5 to \$20 per ton, according to classification.

Northern Pacific Steamship Company.—This line was opened in 1893 and runs in connection with the Northern Pacific Railroad. There are three vessels, the *Tacoma*, the *Victoria*, and the *Sikh*. The terminal points are Tacoma, Washington, and Hongkong, China. Service in summer once in three weeks, and in winter once in four weeks. The

Tacoma is a vessel of 1,662 tons; length, 327 feet; beam, 39; below hatches, 26; horsepower, 250; compound engines; the *Victoria*, 2,035 tons; length, 360 feet; beam, 40; below hatches, 34; horsepower, 500; the *Sikh*, 1,736 tons; length, 335 feet; beam, 40; below hatches, 25; horsepower, 500. First-class passenger rates from Tacoma to Yokohama, \$175; from Tacoma to Hongkong, \$225. Freight rates may be quoted at \$12 per ton, but they vary much under classification. The vessels are in good condition and make the passage in fifteen to eighteen days.

COASTWISE LINES.

Pacific Coast Steamship Company.—This line has been in business for many years between San Francisco (where it connects with the trans-continental railroads) and Puget Sound ports. It also runs steamers the year round from Puget Sound to Wrangel, Juneau, and Sitka, Alaska. In summer extra vessels are put on this northern service that carry excursion parties to that far-off, interesting region. The steamers from San Francisco come directly to Victoria, British Columbia, without touching at intermediate points. After landing passengers and freight at Victoria they spend several days in the Sound, visiting Port Townsend, Seattle, Tacoma, Fairhaven, and occasionally other ports, returning to Victoria before leaving on the homeward bound trip. The distance from San Francisco to Victoria is 750 miles. The vessels are the *Umatilla*, *Walla Walla*, and the *City of Puebla*.

The two former are of 3,070 tons register, iron, screw propellers; length, 310 feet; beam, 40; hold, 22. The *City of Puebla* is somewhat smaller. All are kept in complete repair and are skillfully and safely handled by competent officers. Fare between termini, first class, \$20, including berth and meals; second class, \$10. Freight charges range from \$2.50 to \$6 per ton.

The line to Sitka is made up of the *City of Topeka*, which runs the year round, and the *Queen*. Service monthly. The *City of Topeka* is of iron, screw propeller, 1,057 tons; length, 198 feet; beam, 35; depth, 18. The *Queen* is of 2,728 tons; length, 332 feet; beam, 38; hold, 12½. Fare to Wrangel, \$50; Juneau, \$70; Sitka, \$70.

Canadian Pacific Navigation Company.—This company operates regular lines to Vancouver, British Columbia, to connect with the Canadian Pacific Railway, and to New Westminster and points farther up the Fraser River; also, a northern line to Fort Simpson, Skeena River, Bella Bella, Alert Bay, and Queen Charlotte Islands; also, to Barclay Sound and Alberni on the west coast of Vancouver Island. It owns eight steamers, among them the *Islander*, the *Premier*, the *Danube*, the *Eithet*, and the *Princess Louise*. The *Islander* is an iron vessel, double screw, 864 tons, and usually makes the run to Vancouver daily, 80 miles; fare, \$5. Distance to New Westminster, 75 miles, the *Premier* making the round trip three times a week. She is a screw, wooden

vessel of 498 tons. The *Danube*, an iron, screw vessel, 581 tons, nas the northern run. Distance to Metlakahtla and Fort Simpson, 527 miles; fare, first class, \$20; second class, \$10. Trips to Barclay Sound and Alberni are made every fortnight; distance to Cape Beale, 95 miles: fare, \$5; to Alberni, 129 miles; fare, \$7.

Puget Sound and Alaska Steamship Company.—The boats of this line are the *City of Kingston*, of iron, screw, fitted for freight and passengers, 816 tons; and the *City of Seattle*, of wood, screw, 913 tons. One or the other of these boats make six round trips a week between Tacoma, where they connect with the Northern Pacific Railroad, and Victoria, British Columbia; distance, 114 miles, touching at Port Townsend and Seattle en route. Fare from Victoria to Port Townsend, \$2; to Seattle, \$3; to Tacoma, \$3.50. Freight charges on general merchandise, \$3 per ton. These steamers are in first-class condition, and are palatial and their passenger accommodations good.

The Comax Line.—The steamer *Joan*, a wooden propeller of about 400 tons, new and neat, makes weekly trips from Victoria to Comax, and sometimes extending it to Valdez Island and Seymour Narrows. She runs in connection with the Esquimalt and Nanaimo Railroad, being owned and operated by the same interests. The trips to Comax are continued the year round; to other points in summer only. The ride is a delightful one, constantly among islands and narrow passages, with towering rocky shores on either hand. Numerous landings are made at mills, farms, and hamlets. Distance from Victoria to Comax, 130 miles; fare, \$9, exclusive of meals and berths; to Valdez Island and the Narrows, \$12.

RAILWAYS.

Esquimalt and Nanaimo Railway.—This line, starting at Victoria, runs northwest of Vancouver Island to Nanaimo, 73 miles, and to the Wellington mines, 5 miles farther. Fare to Nanaimo, \$3; to Wellington, \$3.25. Return tickets good for seven days, at one and one-half fare. Excursion rates, one and one-fourth fare, Fridays, Saturdays, and Sundays. The track lies in a mountainous region, and rises to 1,000 feet above Saanieh Arm, which it skirts for several miles. The scenery is delightful. Niagara Canyon is spanned by a trestle of 200 feet in height, and Arbutus and Double Head ravines by trestles of 150 feet each. Shawnigan Lake, 28 miles from Victoria, is a beautiful expanse of water and affords fine trout fishing. Freight rates, car lots, to Nanaimo, \$15. Excursionists to Alaska, when the vessel arrives at Victoria, frequently take this line to Nanaimo, joining the vessel again when it arrives at that point. They also frequently take the cars at Nanaimo, coming down, and await the arrival of the vessel at Victoria.

All these lines are operated by corporations.

HIGHWAYS.

The natural surface of the country is so rough and so obstructed by forest trees and underbrush that carefully constructed highways are a necessity of occupancy by civilized men. Good roads, therefore, abound. They are constructed by skilled engineers, and are paid for out of the general treasury. First-class roads cost from \$2,000 to \$4,000 per mile, and there are 1,250 miles in the province of British Columbia. Second-class roads cost \$500 to \$1,000 per mile. The drives in the vicinity of Victoria are noted for their excellence.

LEVI W. MYERS,

Consul.

VICTORIA, BRITISH COLUMBIA, *May 12, 1894.*

 MANITOBA.

RAILWAYS.

The Northern Pacific Railway.—This railroad is controlled by a corporation of that name. At present it is in the hands of receivers. The principal termini are: In the East, St. Paul and Minneapolis, Duluth, and Superior; on the Pacific Coast, Portland, Tacoma, and Seattle. In addition to the above points, it reaches Winnipeg, Brandon, and Portage La Prairie, in Manitoba, and the following intermediate points on its main line: Fargo, Jamestown, Mandan, Yellowstone Park, Helena, Butte, Spokane, Ellensburg, etc. Total mileage in operation, 4,657 miles. The principal offices are in St. Paul, and the mileage between St. Paul and the points named is as follows: Winnipeg, 482; Portland, 2,056; Seattle, 1,932; Spokane, 1,512; Tacoma, 1,912; Mandan, 450; Jamestown, 343; Helena, 1,130. The condition of the line is good; it is a single track line. The passenger and freight train service is daily. The passenger rates are various; in Manitoba it is 3 and 4 cents per mile. The freight rates vary according to distance and classifications; for instance, taking a distance of 10 miles, first-class rates are 15 cents per 100 pounds, and tenth class, or lowest grade, 5 cents. The other classes are graduated between. A large amount of traffic is brought through from eastern Canadian and American ports; also from Great Britain and the Pacific Coast, as well as from Asiatic points.

Canadian Pacific Railway.—The mileage of all the Canadian Pacific Railway lines is 6,015.5 miles. The total mileage of the western division of this road, which is operated from this city (Winnipeg), is 2,953.8. Of this, 1,449 miles is main line, extending from Port Arthur, Ontario, to Donald, British Columbia, and the whole of it, except 61 miles, is east of the British Columbia boundary. The Qu'Appelle, Long Lake

and Saskatchewan Railway, from Regina to Prince Albert, and the Calgary and Edmonton Railway, from Calgary to Edmonton and Calgary to Macleod, are operated by this company under lease, but in the meantime, they are, to all intents and purposes, parts of the Canadian Pacific Railway.

All the lines in this district forming a part of this system are operated by railway companies, the Government having no interest therein.

The termini of the Canadian Pacific Railway are St. John, New Brunswick, on the Atlantic coast, Quebec, on the St. Lawrence River. Vancouver, on the Pacific coast, and Windsor, on the Detroit River. This is without mentioning branches, many of which reach the international boundary line between Canada and the United States, where goods and passengers may easily be transferred to and from connecting American lines. This company built an important line in 1893 from North Portal, on the boundary line between North Dakota and Assiniboia, to Pasqua, the first station east of Moose Jaw, on the main line, 161 miles. This new line is built according to the highest standard, with heavy steel rails and some of the longest tangents in existence. The importance of this line rests in the fact that in connection with the main line of the Canadian Pacific Railway and the Minneapolis, St. Paul and Sault Ste. Marie Railway it forms the shortest line from St. Paul to the Pacific Coast at Vancouver. The condition of this company's lines is first class in every respect.

All railways in this country are single-track lines; gauge, 4 feet 8½ inches.

On the main line west of Winnipeg, the service is daily; east of Winnipeg it is six days a week, there being no train arriving at or leaving Montreal on Sunday.

The average freight rate per ton per mile on the Canadian Pacific Railway during the year 1893 was 0.87 cent. The average rate per passenger per mile was 1.69 cents. The local rate on this division is 3 cents per mile on the main line between Fort William (Lake Superior) and Brandon, Manitoba. West of Brandon and on the branches the rate is 4 cents per mile. I do not know that on this division and within this consular district there are any very important bridges. The bridge over the Red River of the North at Winnipeg is a masonry and iron bridge, 691 feet long, and was constructed by the city of Winnipeg, and is used by this company under an agreement. The company also has a masonry and iron bridge over the Saskatchewan River at Saskatoon, and there are various crossings of the Assiniboine River in Manitoba, the Bow River in Alberta, and the Kicking Horse River in British Columbia.

The equipment of the Canadian Pacific Railway Company consists of 578 locomotives, 891 passenger coaches, 14,802 freight cars, 522 boarding, tool, auxiliary cars, steam shovels, etc.; 3 steel steamships

on Lake Superior—the *Alberta*, *Athabasca*, and *Manitoba*—and 3 steamships on the Pacific Ocean—*Empress of China*, *Empress of Japan*, and *Empress of India*.

The main line of this road crosses the main chain of the Rocky Mountains at the British Columbia boundary at an elevation of 5,299 feet above the level of the sea.

I have not been enabled so far to report on the Great Northern Railway.

M. M. DUFFIE,
Consul.

WINNIPEG, June 29, 1894.

ONTARIO.

RAILWAYS.

The Canadian Pacific and the Canada Atlantic are the only through lines of railway touching Ottawa. The Grand Trunk Railway secures entrance to the city by arrangement with the Canada Atlantic, using its track from Coteau, 78 miles from Ottawa.

Canadian Pacific Railway.—The Canadian Pacific Railway Company was organized in 1881 to construct a road across the continent. Prior to that time, the Canadian Government had commenced the construction of such a line. In 1881, it made an arrangement with the Canadian Pacific Company to build the road, and in aid of the enterprise gave 413 miles of road which it had constructed between Lake Superior and Winnipeg, and 213 miles between Burrards Island, on the Pacific, and Kamloops Lake, British Columbia. The cost of the lines thus ceded, and other improvements transferred to the company at the same time, amounted in the aggregate to \$37,527,995. In addition to these, a subsidy or bonus of \$25,000,000 was made, besides a grant of 26,586,000 acres of agricultural land. The company now owns 5,766 miles of railway, with termini at Quebec and St. John, New Brunswick, in the east, and Detroit, St. Paul, Duluth, and Vancouver, in the west. The distances in miles from Quebec are: To Vancouver, 3,078; to Detroit, 744; to Duluth, 1,212; to St. Paul, 1,305; to Montreal, 176; to Ottawa, 296; to Winnipeg, 1,421. It is a single-track road, first-class construction and equipment, and runs through passenger trains daily. The local rate is 3 cents per mile. Through return tickets are sold at about one-half this rate. The rates for freight depend upon the length of haul and class of goods.

The company also have three first-class steamers plying between Vancouver and China and Japan. It also has a line of steamers on the Great Lakes, between Owen Sound and Fort William, touching at Sault Ste. Marie en route.

Canada Atlantic Railway.—The construction of this line was commenced in 1881. When completed, it will connect the Vermont Central and Delaware and Hudson River systems at Rouses Point with Parry Sound on Lake Huron, and will furnish the shortest rail and water route from Chicago, Milwaukee, Duluth, and other lake ports to Boston, Portland, and other New England points. The road is completed from Ottawa to Rouses Point, 135 miles east, and to Long Lake, 140 miles west of Ottawa. The company expects to finish the line next year. It is a single-track road, thoroughly built and equipped. It connects with the main line of the Grand Trunk Railway at Coteau, 50 miles west of Montreal. The company bridged the St. Lawrence at this point at a cost of \$1,200,000.

The road carries the larger part of the lumber from the Ottawa Valley to New York and the New England States. West of Ottawa, the road runs through the Algonquin Park, a large tract of primeval forest set apart by the Province of Ontario. This region is regarded as the best fishing and hunting ground in Canada. The rates charged for passengers and freight are about the same as charged by the Canadian Pacific Company.

THE RIDEAU CANAL.

The Ottawa River and Lake Ontario are connected by the Rideau Canal, the termini being Ottawa and Kingston, the distance between the cities being 126 miles. The canal was constructed by converting the Rideau and Cataraqui rivers into a continuous navigable channel. There are forty-seven locks. The depth of water on the lock sills is 5 feet. The locks are 134 by 33 feet. The canal was constructed for military purposes by the British Government between 1826 and 1832, at a cost of \$3,911,701, and was transferred to the Canadian authorities in 1857. With the completion of this work, access by water to the Great Lakes from the St. Lawrence at Montreal was had via the Ottawa River and this canal, the whole distance from Montreal to Kingston being 246 miles. The completion of the St. Lawrence canal system has rendered it useless for that purpose, but lumber and other products originating in the Ottawa Valley are shipped to New York via the Ottawa River to Montreal, thence down the St. Lawrence River to Sorel, 45 miles east of Montreal, thence by the Richelieu River to Lake Champlain, through Lake Champlain and the Champlain Canal to the Hudson River at Troy. Shipments from the Ottawa Valley are made to Lake Ontario ports via the Rideau Canal.

JOHN B. RILEY,
Consul-General.

OTTAWA, *September 20, 1894.*

NEW BRUNSWICK.

The natural situation of St. John, possessing the only harbor of easy access upon the northerly side of the Bay of Fundy, and its connection with the interior by the broad, navigable River St. John, render it the natural point of distribution for New Brunswick. These causes have made it the terminus of the principal railway systems of the Province.

OCEAN LINES.

Furness Line.—The Furness Line plies between this port and London, touching at Halifax, and has four steamers, of 1,400 tons each, making fortnightly trips. The vessels are fitted for freight and passengers, are well equipped, and in good condition.

West India Line.—The West India Steamship Line makes monthly trips between St. John and Demerara, employing two steamships, of 1,180 tons each, and touching at Bermuda and various of the West India Islands. These steamships are primarily intended for the carriage of freight, but afford comfortable accommodation for passenger traffic.

COAST LINES.

International Steamship Company.—The larger portion of summer traffic, both in passengers and freight, is carried by the International Steamship Company. This is an American line, of which the principal offices are at Boston, Mass., and Portland, Me., and was established some forty years ago.

This line has at present three steamers, of 868, 1,145, and 1,188 tons, respectively, making daily trips between Boston and St. John during the summer, and semiweekly trips at other times. Its steamers touch at Portland, Eastport, and Lubec, Me. Another boat, now in process of construction at Bath, will be placed on the route upon its completion in the early fall.

In behalf of this line, the well-founded claim is made that it is surpassed by no coastwise line of equal extent in the world in the character and equipment of its boats and the personnel of its officers and crews, and its appreciation by travelers and tourists is attested by the constantly increasing volume of its business.

This route affords the most direct and comfortable means of reaching the various points of interest in the Maritime Provinces from the United States.

Bay of Fundy Company.—The Bay of Fundy Steamship Company uses a single steamer, of 478 tons, between St. John and Digby, Nova Scotia, and is a favorite route for tourists wishing to visit the Annapolis Valley and “Land of Evangeline.” It is a daily summer line—semiweekly in winter—and is excellently well fitted to insure the comfort and convenience of travelers.

A single steamer of small tonnage plies weekly between this port and the Island of Grand Maun, and is the only regular means of reaching that resort. It touches at Eastport and Campobello.

All the foregoing lines, except the International, which is owned and operated by Americans, are heavily subsidized by the Dominion Government.

NAVIGABLE RIVERS.

The St. John River is navigable for some 90 miles, and two small steamers run between St. John and Fredericton, the capital, during the summer months, affording a most delightful excursion for tourists through the fertile valley of this river.

RAILWAYS.

The principal railway lines of the Province center at this port.

The Atlantic division of the Canadian Pacific runs from St. John along the banks of the river to Edmonton, at the extreme northern point of Maine, thence connecting with its western division. It also runs directly through the State of Maine, connecting at the frontier, at Vanceboro, with the Maine Central system, making the through rail route from the United States. It has a branch running to Fredericton, the capital. It is excellently ballasted and equipped.

The Intercolonial Railway, the building of which was a condition upon which the Maritime Provinces joined the confederation and was provided for in the act of union, extends from St. John to Moncton; thence southerly through Nova Scotia to Halifax and Sydney, and northerly by the Bay of Chaleur beyond the northern extremity of Maine to Quebec. It is wholly owned and operated by the Dominion Government, and is a well-conducted railway in respect to its equipment, road-bed and general management. Over these roads two passenger trains are run daily.

The Shore Line Railway runs between St. John and St. Stephen, on the St. Croix River. It is expected that a connection will be made between the terminus at the Maine frontier and the Maine Central. Until this is done the road is useful only for purely local traffic and is not available for the carriage of through business.

All the railways of the Province are operated over a single track.

HIGHWAYS.

Concerning the highways, no special mention seems necessary, as they possess no particularly noteworthy features, except, perhaps, the general excellence of the bridges, which are constructed at the expense and under the control of the Government. It is doubtful, however, whether such construction is as economical as the municipal performance of like work would be.

PASSENGER AND FREIGHT RATES.

The accompanying table gives as nearly as I am able to ascertain, the rates upon the various steamship and railway lines. Freight charges greatly differ between long and short hauls, and depend upon the amount of traffic and the extent of competition by water and otherwise; so much so, indeed, that no satisfactory schedule of rates could be obtained of officials. There are also discriminating rates given upon the roads owned by the Government in favor of the produce of the northern and western Provinces.

Names.	Ownership, etc.	Termini.	Length.	Rates.	
				Passenger.	Freight.
OCEAN LINES.					
International Steamship Co.	Private corporation, American.	St. John and Boston.	Miles.	\$5 to Boston....	12½, 15, 20 cents per 100 pounds to Boston. Depends largely upon contract.
Furness Line.....	Private corporations heavily subsidized by the Dominion Government.	St. John and London.	.....	\$50 to London...	
West India Steamship Co.		St. John and Demerara.	.....	\$110 to Demerara.	
Bay of Fundy Steamship Co.		St. John and Digby, Nova Scotia.	30	\$1.75 to Digby..	
Grand Menan Line.		St. John and Grand Menan.	90	\$2 to Grand Menan.	
RAILWAYS.					
Canadian Pacific Railway, Atlantic division.	Corporation, aided by Government.	St. John and Edmonton.	310	3½ cents per mile.	¼ cent per ton per mile.
Intercolonial Railway.	Owned by Dominion Government.	St. John and Halifax and Sydney.	1,060	3 cents per mile length.	Greatly varies.
Shore Line Railway.	Private corporation.	St. John and St. Stephen.	80	.....

JOHN S. DERBY,
Consul.

ST. JOHN, NEW BRUNSWICK, *February 15, 1895.*

NOVA SCOTIA.

RAILWAYS.

The Government of Canada controls the Intercolonial Railway, and the Windsor and Annapolis Railway is controlled by the company.

The termini and main points reached by the Intercolonial Railway are Halifax, Sydney, Pictou, St. John, and Quebec; and by the Windsor and Annapolis Railway, Halifax, Annapolis, and ultimately Yarmouth. The length of the Intercolonial Railway is about 1,135 miles, and the distances from Halifax are: Sydney, 276 miles; Pictou, 117 miles; St. John, 275 miles; Quebec, 674 miles. The distance from Halifax to Annapolis (on the Windsor and Annapolis road) is 116 miles.

European mail and freight steamships connect at Halifax by several lines of steamers of various sizes.

The roads are single track. Trains run daily each way to terminals; to intermediate points more frequently.

Local rates for passengers, 3 cents per mile; through and excursion rates less. Freight rates, according to classification, distance, and quantity.

Highways or turnpike roads are about 60 feet wide.

GEORGE HILL,
Vice Consul-General.¹

HALIFAX, *May 9, 1894.*

NEWFOUNDLAND.

The steamship lines between the United States and St. Johns are the Allan Line, from Baltimore and Philadelphia, calling at this port on its way to Glasgow, and receiving a subsidy from the Newfoundland Government for conveying mails from Great Britain, Halifax, and the United States to this port, and the Red Cross Line, which runs from New York to this port via Halifax. Both lines carry mails, and passengers when offered, and are owned by English companies. The rate of passage is from \$25 to \$40 to Baltimore; \$20 to \$30 to New York. Freight is 40 to 50 cents per barrel. Railroad communications across the country are not yet completed.

THOS. N. MOLLOY,
Consul.

ST. JOHNS, NEWFOUNDLAND, *March 5, 1895.*

PRINCE EDWARD ISLAND.

OCEAN LINES.

The ocean lines having Charlottetown as one of their termini, or as one of their ports of call, are the Canada Atlantic and Plant Steamship Line, Black Diamond Steamship Company, Quebec Steamship Company, Pickford & Black Line, and Dobell Line

The termini of the Canada Atlantic and Plant Steamship Line are Boston, Mass., and Charlottetown. The distance between Boston and Charlottetown is 612 miles. There is but one steamer on the line, viz, the *Florida*. She is in good condition and well adapted, both as to

¹Vice Consul-General Hill omits to state that the Allan Line and the Red Cross Line of British steamers, as mentioned in the report from St. Johns, Newfoundland, call at Halifax.

freight and passenger traffic, to the requirements of the route. This is the *Florida's* first season to ply between these ports, and she has been specially fitted up to perform her work. She has a gross of 1,787 and a net of 1,307 tons. She makes weekly trips between this port and Boston. The passenger rate (first class) for the round trip is \$7.50. The freight rates are: From Boston to Charlottetown—fruit, 10 cents per cubic foot; flour, 17 cents per barrel; tobacco, hardware, and manufactured cotton goods, 20 cents per 100 pounds. From Charlottetown to Boston—potatoes, 18 cents per 100 pounds; mackerel, 30 cents per barrel; lobsters, 8 cents per case; eggs, 20 cents per case; hides and pelts, 15 cents per 100 pounds; horses, \$15. These are among the principal articles moving between both ports. Briefly stated, the rates charged by the line range from 6 to 10 cents per cubic foot, according to class, so that the freight upon any article not herein enumerated can be easily determined. The line is controlled by a corporation. The agents here are the Charlottetown Steam Navigation Company.

The termini of the Black Diamond Steamship Company are Montreal, and St. Johns, Newfoundland, with Charlottetown and Sydney, Cape Breton, as ports of call. There are two steamers on the line, viz, the *Bonavista* and *Coban*. The line is controlled by a corporation. The *Bonavista* has a gross of 1,306 and a net of 836 tons. The *Coban* has a gross of 1,063 and a net of 688 tons. The steamers are specially fitted for the passenger trade in the Gulf of St. Lawrence, having all the latest appointments and carrying experienced stewardesses. The passenger rates (first class) from Montreal are as follows: To Charlottetown, \$18; to Sydney, \$18; to St. Johns, \$30. These rates include both meals and berth. The distance between Montreal and Charlottetown is 780 miles; between Charlottetown and Sydney, 217 miles; between Sydney and St. Johns, 360 miles. Fortnightly trips are made between Montreal and this port. The agents here are Peake Bros. & Co.

The termini of the Quebec Steamship Company are Montreal, and Pictou, Nova Scotia, with Quebec, Summerside, Prince Edward Island, and Charlottetown as ports of call. There is but one steamer, the *Miramichi*, on the route, and the controlling power is vested in a corporation. The *Miramichi* has a gross of 727 and a net of 491 tons. Her freight and passenger accommodation is good. The passenger rates (first class) are: From Montreal to Summerside, \$24, and from Montreal to Charlottetown, \$25. These rates include berth and meals. The distance from Montreal to Quebec is 180 miles; from Quebec to Summerside, 540 miles; from Summerside to Charlottetown, 40 miles. The *Miramichi* makes fortnightly trips between Montreal and Charlottetown. Her agents here are Carvell Bros.

The termini of the Pickford & Black Line are Halifax, Nova Scotia and Summerside, Prince Edward Island, with harbors along the eastern coast of Nova Scotia, Arichat, Cape Breton, and Charlottetown as

ports of call. The steamer on the route is the *Fastnet*. She has a gross of 337 and a net of 155 tons, and is owned by a corporation. Although designed chiefly for the freight requirements of the route, she has capital passenger accommodation. The rates (first class) from Halifax to Charlottetown, to and from Halifax to Summerside and return, are \$7 and \$7.50 respectively. Halifax is 257 miles from Charlottetown and 297 miles from Summerside. Weekly trips are made between all three ports. The agent here is W. W. Clarke.

The termini of the Dobell Line are Montreal, and St. Johns, Newfoundland, with Summerside and Charlottetown as ports of call. The steamship on the line is the *Polino*. She has a gross of 807 and a net of 524 tons. A corporation controls the line. The accommodation is almost exclusively for freight, and communication between the points mentioned depends, in a great measure, upon the quantity of freight offering. The agents here are N. B. & M. Rattenbury.

Traffic between the Magdalen Islands (situated about 50 miles north of Prince Edward Island) and the last named place is kept up by the steamer *St. Olaf*, which leaves Souris, Prince Edward Island, every week. She has a gross of 305 and a net of 72 tons. Accommodations for passengers are also provided. The distance between Souris and the Magdalen Islands is 60 miles.

COAST LINES.

Connecting Prince Edward Island with the mainland are two steamers, both owned by the Charlottetown Steam Navigation Company. These steamers make daily connections with the railway systems in Nova Scotia and New Brunswick. The *St. Lawrence* plies between Charlottetown and Pictou, Nova Scotia, the distance between the points being 45 miles. She is a side-wheel vessel of 846 tons gross and 675 tons net, and has good accommodation for freight and passengers.

The *Northumberland*, a steel, twin-screw steamer of 1,255 tons gross and 519 tons net, runs between Summerside and Point du Chene, New Brunswick. Summerside is distant from Charlottetown 49 miles. An express train on the Prince Edward Island Railway makes daily connections between both points, enabling passengers to catch the *Northumberland* at the former. The distance between Summerside and Point du Chene is 35 miles. The *Northumberland* is palatial in her appointments, and of admirable seagoing qualities.

RAILWAYS.

But one railway line traverses the Province of Prince Edward Island, viz, The Prince Edward Island Railway. It is a Government work, being owned and controlled by the government of Canada. Its track, a narrow gauge one, is 213 miles in length, and traverses the island from east to west. The termini are Charlottetown, Georgetown, and Souris in the east, and Tignish and Cape Traverse in the west.





Between this latter point and Cape Tormentine, New Brunswick, the winter ice-boat service across the Northumberland Strait is kept up. Trains runs daily over the whole line.

After leaving this Province and arriving in the neighboring Provinces of New Brunswick and Nova Scotia, passengers can reach the United States over the Intercolonial Railway or the Canadian Pacific Railway, or by steamship routes from St. John and Halifax.

DOMINIC J. KANE,

Consul.

CHARLOTTETOWN, P. E. I., *January 1, 1894.*

MEXICO.

PHYSICAL FEATURES.

The physical condition of Mexico is entirely different from the region north of it. The configuration of the country and the character of the seasons make great navigable rivers impossible. It is only on the level of the coast that some few rivers admit of traffic by small craft, and that not exceeding 125 miles from the Gulf and 62 miles from the Pacific coast. The numerous peaks, whose altitudes are between 10,000 and 17,000 feet above the level of the sea, are sparingly snow clad, and the quantity of snow falling on them is insufficient for causing large volumes of water or large streams. On the central table-lands, there are a few lakes, the waters of which are utilized to a limited extent by the Indians for traffic in their small, crude canoes. Canals are impracticable, on account of the topography, excepting on the Gulf coast and the plains of the central States and of the northern frontier; but the greatest obstacle to interior navigation is the fact that in certain periods of the year, principally in the dry season, either by natural evaporation or by the careless use of the waters for irrigation, the springs decrease to such an extent as to render the streams insufficient to float the smallest boats. Sooner or later this waste of water will be remedied, as the authorities are vigilant in protecting and guarding every element that contributes to the advancement of Mexico. This lack of means for navigation might, to a certain extent, be remedied by canalization and drawing off the waters existing in natural basins in various parts of the Republic and diverting them at intervals in certain seasons of the year to the rivers or canals which are navigable to maintain constantly the required depth.

On account of the peculiar geological formation of the country it has been difficult for the rulers to build good highways. Axayacatl, King of Mexico from 1469 to 1481, was evidently aware that of all the needs of a prosperous country there are few more important than the establishment and maintenance of facilities of communication to link together

and promote relations among its people. Consequently he built several roads connecting the great Tenochtitlan with the neighboring towns of his numerous allies. Cortez and his followers, after conquering the Aztec Empire, discovered that Mexico, with an immense extent of territory and a large variety of race elements, should have better means of travel and transportation, and later on the viceroys and Franciscan friars initiated lengthy highways. Three centuries of Spanish domination, however, did not accomplish much in this direction. The exertions of President Diaz and his liberality toward railroad enterprises and steamship lines have been the chief factors in establishing means of communication throughout the Republic, accomplishing what none of his predecessors could do—that is, making this one of the most prosperous of the Spanish-American countries.

I. RAILWAYS.

The principal railways in Mexico are controlled by corporations, excepting the Tehuantepec, which is owned by the Mexican Government. All are single track, more than half of their number standard gauge, and their condition, with few exceptions, is first class.

The Mexican Railway.—This was the first railway constructed in the Republic. It was begun in 1857, and portions of the line were opened at different times. The Puebla branch was inaugurated in 1869; the main line was opened for its entire length in 1873, and the extension from Ometusco to Pachuca in December, 1890. It is broad gauge, and runs through the States of Vera Cruz, Puebla, Tlaxcala, Hidalgo, and Mexico. It starts from the city of Vera Cruz, runs through Cordova, Orizaba, Puebla, Tlaxcala, and Pachuca and terminates at the City of Mexico. The length of the main line, City of Mexico to Vera Cruz, is 264 miles; the Pachuca branch 28 miles, the Puebla branch 29 miles, and the Tlaxcala branch (animal traction), 5 miles. Trains from the City of Mexico for Vera Cruz leave daily at 7 a. m., arriving on the same day at 6.30 p. m. From Vera Cruz trains leave at 6 a. m., arriving at 6.40 p. m. Connections are made with such trains at Apizaco for Puebla and Tlaxcala, and at Ometusco for Pachuca. An accommodation train leaves the City of Mexico daily in the afternoon for Pachuca and Puebla.

Passenger (first class) rates from the City of Mexico to Pachuca are \$2.96; to Puebla, \$3.06; to Esperanza, \$6.15; to Orizaba, \$8.34; to Cordova, \$9.56, and to Vera Cruz, \$14.50. Baggage allowance, 37 pounds; on through tickets, 150 pounds.

Rate on freight from Vera Cruz to Mexico is $4\frac{1}{2}$ to $9\frac{1}{2}$ cents per kilometer (0.621376 of a mile) per ton of 1,000 kilograms (2,204 pounds), and from Mexico to Vera Cruz half these rates. This road and the Interoceanic, Mexican Central, National, and International have formed a pool, and on long hauls, such as from the United States and Europe, have fixed and combined rates.

The Mexican Railway connects in Mexico City with the Mexican Central and Mexican National for northern and western points, and with the Interoceanic Railroad for Morales; in Puebla, with the Mexican Southern for Oaxaca, Puerto Angel, and Tehuantepec, and with the Interoceanic for Ixucar Matamoras; in San Marcos, with the Nantla Railroad for San Juan de los Llanos; in Esperanza, with the Tehuantepec Railroad; in Cordova, with the Agricola Railroad for Motzorongo and Tuxtepec; and in Vera Cruz, with the Alvarado Railroad for Tlacoalpam, San Andres, Tuxtla, Cosamaloapan, and Playa Vicente, and with steamship lines for Mexican gulf ports, namely, Progreso, Campeche, Carmen, Frontera, Coatzacoalcos, Tuxpan, and Tampico, and for Havana, American, English, Spanish, French, and German ports.

The Mexican Central.—This important means of communication between Mexico and the United States was constructed by virtue of a concession granted by the Mexican Government in April, 1880, which has been amended and modified at various times permitting the company to build branch lines to Guadalajara, Tampico, and Guanajuato. Work was commenced in May, 1880, and carried on simultaneously at its northern and southern extremities, completing the main line sooner than was anticipated by both the Government and the public. The road was opened to regular passenger traffic on the 10th of April, 1884. The Guadalajara division was opened May 21, 1888, and the Tampico division was finished March 30, 1890, thereby bringing the line to the Gulf of Mexico at Tampico. The railway is broad gauge, and traverses the Federal District, the States of Mexico, Hidalgo, Queretaro, Guanajuato, Jalisco, Aguas Calientes, Zacatecas, Coahuila, Durango, and Chihuahua. It affords an outlet to the agricultural centers of San Juan del Rio, Penjamo, Silas, the extensive territory called El Bajio, and Lagos; to such manufacturing cities as Queretaro, Celaya, and Leon; to the rich mining districts of Pachuca, Zimapan, Guanajuato, Zacatecas Sombrete, Sierra Mojada, and Chihuahua; to the cotton country in the valleys of the rivers Nazas and Conchos; and to the commercial centers of Mexico, Guadalajara, Aguas Calientes, San Luis Potosi, and Tampico.

The length of the main line, City of Mexico to El Paso, Tex., is 1,224 miles; of the San Luis Division (including Tampico branch) 415 miles; Guadalajara division, 161 miles; Pachuca branch, 93 miles; Guanajuato branch, Silao to Guanajuato, 16 miles, and San Blas division, 17 miles. Through trains, from Ciudad Juarez for the City of Mexico, leave daily at 5.15 p. m., arriving next day at Chihuahua at 7 a. m.; at Jimenez at 1.15 p. m., and at Torreon at 6.45 p. m.; the second day, at 9 a. m. it reaches Zacatecas; at 12.15 a. m., Aguas Calientes; and Silao at 6 p. m., finally arriving at the City of Mexico at 7 a. m. on the third day. The train for Tampico leaves City of Mexico at 9 a. m., arriving at Aguas Calientes at 12.15 a. m.; leaves Aguas Calientes at 2.45 a. m., arriving at San Luis Potosi at 7.55 a. m., and at Tampico at 9.30 p. m.

The train from Tampico leaves at 6 a. m., arriving at San Luis Potosi at 7.20 p. m., same day, and at Aguas Calientes at 1.15 a. m., reaching City of Mexico on the second day at 6.30 p. m. From Silao a train leaves daily for Guanajuato upon arrival of through and accommodation trains either way. From Irapuato, a train leaves daily at 8.35 a. m., arriving same day at Guadalajara at 3.30 p. m.; leaving Guadalajara at 11.30 a. m., this train returns to Irapuato, arriving there at 6.20 p. m. A train for Pachuca leaves the City of Mexico daily at 9 a. m., transfers at Tula, arriving at 1 p. m. same day; returning from Pachuca at 2.30 p. m., it arrives at City of Mexico at 6.30 p. m.

The Mexican Central connects at El Paso with the Atchison, Topeka and Santa Fe; for all points northeast and west with the Texas and Pacific; with the Southern Pacific for points north and east; with Southern Pacific Company and the Atchison, Topeka and Santa Fe for points north and west in the United States; at Gallejo, with stage for Ascencion and Oasa Grandes Corralitos; at Chihuahua, with stage for Cusihuiriac, Guerrero, and Rosario; at Jimenez, with stage for Allende and Parral; at Escalon, with Mexican Northern Railway for Sierra Mojada; at Torreon, with the Mexican International for Durango, Monterey and Tampico via the Mexican Gulf Railway; at Fresnillo, with stage for Sombrerete; at Zacatecas, with Sullivan Construction Railway for Ojo Caliente, with tramway for Guadalupe, and with stage for Jerez; at San Luis Potosi, with the Mexican National for Catorce Mines, Saltillo, Monterey, and San Miguel Allende; at Tampico, with steamers for Galveston, New Orleans, Mobile, New York, and European ports; at Celaya, with Mexican National for points north and south of that road; at Negrete, La Barca, and La Piedad, with stage for Zamora; at Guadalajara, with stage for Mazatlan, Tepic Guzman, Ameca, and Zapotlan; at El Castillo, with tramway for the falls of Juanacatlan; at Atequiza, with stage for Lake Chapala; at the City of Mexico, with the Mexican Railway and Interoceanic for Puebla Cholula, Orizaba, Vera Cruz, Jalapa, Cuautla, Oaxaca via Mexican Southern, with the Hidalgo Railway for Tulaucingo; at Huachinango, with the Mexican National for Toluca, Morelia and Lake Patzcuaro, and with stage for Cuernavaca.

First-class passenger rates from El Paso are: To Chihuahua, \$11.08; to Jimenez, \$18.27; to Escalon, \$20.53; to Torreon, \$25.55; to Zacatecas, \$48.59; to Guanajuato, \$49.30; to Irapuato, \$49.51; to Celaya, \$51.38; to Queretaro, \$52.79; to Tula, \$57.86; to City of Mexico, \$60.31; from Aguas Calientes to San Luis Potosi, \$8.61, and to Tampico, \$18.12; from Irapuato to Guadalajara, \$10.61. From City of Mexico: To Pachuca, \$2.96; to San Luis Potosi and return, \$24; to Tampico and return, \$45; to Guadalajara and return, \$25. Baggage allowance, 33 pounds on local and 150 pounds on through tickets.

Rates of freight from El Paso to City of Mexico, and vice versa, are: Class A, 5½ cents; class 1, 4½ cents; class 2, 3 cents, and class 3, 2½

cents, per ton (2,204 pounds) per kilometer (0.6214 mile.) Freight rates on local traffic from Tampico to San Luis Potosi are the same as those of the Mexican Railway from Vera Cruz to City of Mexico. For car-load rates a rebate of 5 to 15 per cent is allowed the on above rates.

The Mexican National Railroad.—This road has no less importance than the Central, although it is a narrow gauge. It is the shortest route from the United States to Mexico. The through line was completed September, 1888, and was opened for traffic November 1, 1888. It unites the capital of the Republic with the States of Mexico, Michoacan, Guanajuato, San Luis Potosi, Coahuila, Nuevo Leon, and Tamaulipas. After ascending from the City of Mexico on its way west and north, this road touches Toluca, Maravateo, Acambaro, Morelia, Patzcuaro, Celaya, San Miguel, Allende, Dolores Hidalgo, San Luis Potosi, Vanegas, Saltillo, Monterey, Lampazos, and Laredo. The length of the main line, City of Mexico to Nuevo Laredo, is 840 miles; the Patzcuaro branch, Acambaro to Patzcuaro, 96 miles; Matamoras division, Matamoras (on the Rio Grande) to San Miguel, Tamaulipas, 75 miles; El Salto branch, City of Mexico to El Salto, 42 miles; and from Laredo, Tex., the road runs 161 miles east to the port of Corpus Christi.

Through trains from Laredo leave daily at 4.45 p. m., arriving at the City of Mexico on the third day at 8.55 a. m., making the trip in forty hours. From the City of Mexico it leaves daily at 5 p. m. for Laredo, arriving at 10.45 a. m. third day. An accommodation train leaves Laredo daily at 6.40 a. m., and reaches Monterey at 7.45 in the evening; leaves Monterey 6.35 a. m., and reaches Laredo at 6.50 p. m. same day. A train leaves Saltillo at 7 a. m. daily, and in a five hours run reaches Monterey; returning, leaves Monterey at 8.35 p. m., and reaches Saltillo at 3 a. m. next day. An express train leaves San Miguel daily, excepting Sundays, at 5.45 a. m., and arrives at the City of Mexico at 8.15 p. m. same day; going north, the same train leaves Mexico City at 6.30 a. m., and reaches San Miguel at 8.35 in the evening. Trains leave Acambaro daily, Sundays excepted, for Morelia at 4.30 p. m. and 7.45 a. m., arriving at 7.45 p. m. and 12.45 a. m., same day; this train continues on to Patzcuaro, arriving at 5.10 p. m.; returning, trains leave Patzcuaro at 6.30 and 10.20 a. m., reaching Morelia same day at 9.25 a. m. and 3.20 p. m. Trains run from Matamoras on Mondays, Wednesdays, and Fridays at 9 a. m., and reach San Miguel same day at 3 p. m.; leave San Miguel Tuesdays, Thursdays, and Saturdays at 10 a. m., arriving at Matamoras at 4 p. m. An accommodation train leaves the City of Mexico daily at 5.30 p. m., arriving at El Salto at 9.45 same evening; leaves El Salto at 5.30 a. m., arrives at the City of Mexico at 9.25 same morning.

The connections of the Mexican National are at Laredo, for points north and east in the United States; at Matamoras, with the Mexican Gulf Railway for Venadito, Montemorelos, and Tampico; at Vanegas, with Vanegas, Cedral and Rio Verde Railroad for Cedral and Mate-

huala; at San Luis Potosi, with Mexican Central for Aguas Calientes and Tampico; at Celaya, with same road for Guanajuato and Guadalajara; at Maravateo, with Michoacan and Pacific Railroad for Agangeo; at Toluca, with San Juan Railroad for Valle; at Mexico City, with the Hidalgo, the Interoceanic, and the Mexican for Pachuca, Puebla, Vera Cruz, Jalapa, Orizaba, and Cuautla Morelos.

First-class passenger rates from Laredo are as follows: To Monterey, \$8.24; Saltillo, \$11.54; Vanegas, \$17.39; San Luis Potosi, \$23.41; Celaya, \$30.27; Acambaro, \$32.53; Maravateo, \$34.43; Toluca, \$39.02; City of Mexico, \$41.25. From Mexico City: To Toluca and return, \$3; Maravateo, \$6.83; Morelia and return, \$15.50; Patzcuaro and return, \$18; Celaya, \$8.94; San Luis Potosi and return, \$24; El Salto, \$1.93; from Matamoras to San Miguel, and vice versa, \$3. Baggage allowance either on local or through tickets is precisely the same number of pounds as given for the other Mexican roads.

Freight rates from Laredo to City of Mexico and vice versa are, on an average, for Class A, 9½ cents; class 1, 5½ cents; class 2, 3¾ cents; class 3, 3 cents per ton (2,204 pounds) per kilometer (0.6214 mile), and for car loads about half the ton rate. Rates from Matamoras to San Miguel, and vice versa, are: Class A, 12 cents; class 1, 6 cents; class 2, 4 cents; class 3, 3 cents, and for car loads about half the ton rate.

The Interoceanic Railway.—This road, although narrow gauge, is a potent competitor of the Mexican Railway. The aim of the Mexican Railway Company was to build the shortest possible line with the steepest workable gradients; that of the Interoceanic to make a similar connection, but with easier gradients, and passing through entirely different districts, where there was known to exist local traffic of an important kind.

The professed purpose of the Interoceanic is to connect the two oceans, the Atlantic and the Pacific, by establishing communication between Vera Cruz, as the Gulf terminus (the city of Puebla being the central point of the two sections), with a branch to Mexico City; thence southward to the rich sugar and mineral districts of Morelos, finally connecting with the main line at Chelpancingo, the capital of Guerrero. The finished section of this road traverses the States of Vera Cruz, Puebla, Tlaxcala, Mexico, and Morelos, touching the cities of Vera Cruz, Jalapa, Puebla, Cholula, Jojutla, and Amacusac, and the proposed line will cross the whole State of Guerrero, touching Chiantla, Textla, Chilpancingo, and Acapulco. The main line from Vera Cruz to Puebla and the branch to Mexico City and thence to Morelos, were opened for traffic more than two years ago, and the line from Puebla to Acapulco is well advanced, having 150 kilometers (93.2 miles) built, Chiantla being the present terminus. The distance between Vera Cruz and the City of Mexico by the Interoceanic is 360 miles; from Mexico to Jojutla, 123 miles; from Puebla to Chiantla, 94 miles; and from Virreyes to San Juan de los Llanos, 7 miles.

A train leaves Vera Cruz at 1.30 p. m. daily for City of Mexico, arriving at Jalapa at 6.28 p. m.; resuming next day at 5.50 a. m., it reaches Puebla at 12.16 p. m., arriving at City of Mexico at 6.23 a. m., same day. A train leaves City of Mexico daily at 7 a. m., arriving at Puebla at 12.45 a. m. and at Jalapa at 7.25 p. m.; resuming next morning at 6.55, it reaches Vera Cruz at 11.54 a. m. Accommodation trains run daily from City of Mexico to Texcoco and Ozumba, and from Puebla to San Martin. Trains leave City of Mexico daily at 7.45 a. m., arriving at Jojutla at 4.32 p. m.; returning, leave Jojutla at 9.25 a. m., reaching City of Mexico at 7 p. m. Trains leave Puebla daily at 7.30 a. m., arriving at Chietla at 12.35 a. m.; returning, leave Chietla at 2.05 p. m., arriving at Puebla at 7.08 p. m. Trains leave Virreyes at 10.20 a. m. and at 2.30 p. m. for San Juan; returning, leave San Juan at 9.25 a. m. and 2.30 p. m., arriving at Virreyes at 9.50 a. m. and 2.55 p. m. Baggage allowance is the same as given by the other roads.

Connections: At City of Mexico, with Mexican Central and Mexican National railroads for points north and west; at Otumba, with Mexican Railway; at Irolo, with Hidalgo Railway for Pachuca; at Puebla, with Mexican Southern for Oaxaca, with Mexican Railway for Tlaxcala, and with Industrial Road (animal traction); for Cholula and San Marcos, with the Nautla Railroad and Mexican Railway; at Jalapa, with tramway for Coatepec; at Vera Cruz, with Mexican Railway for Alvarado, and with steamers for Gulf ports, Havana, United States, and Europe; at Compania, with tramway for Chalco; at Yantepec, with private conveyance for Cuernavaca; at Jojutla, with stage for principal towns in the State of Guerrero.

First-class passenger rates: From Vera Cruz to Jalapa, \$2.70; to Oaxaca and return, \$26.50; to Puebla and return, \$13; to City of Mexico and return, \$20. From Jalapa to San Marcos, \$3.11; to Puebla, \$4.23; to Irolo, \$6.63; to City of Mexico, \$8.47. From City of Mexico to Texcoco and return, \$1.50; to Otumba, \$1.43; to Irolo, \$1.84; to Puebla, \$3.06 (round trip, \$4); to San Marcos, \$5.37; to Jalapa, \$8.47 (round trip, \$15); to Vera Cruz, \$11.17 (round trip, via the Mexican Railway, \$22); to Ameca and return, \$2; to La Compania and return, \$1.25; to Cuautla and return, \$4; to Jojutla and return, \$7; to Oaxaca and return, \$17.50. Baggage allowance is the same as given by the other roads.

Through freight rates from Mexico to Vera Cruz, and vice versa, are the same as those of the Mexican Railway, but local rates are: Class A, 12 cents; class 1, 6 cents; class 2, 4½ cents; class 3, 3½ cents, per ton (2,204 pounds) per kilometer (0.621 mile). On car-load lots the same discount is allowed as by the competing lines. Rates for exportation from Jojutla, Mexico, Irolo, Matamoras, Puebla, and Jalapa to Vera Cruz are: Class 1, 2½ cents; class 2, 1½ cents; class 3, 1 cent per kilometer per ton of 2,204 pounds. Local rates from Jojutla to City of Mexico and from Matamoras to Puebla are the same as the local rates on the main line.

The Mexican International.—This standard gauge railway is an extension of the Southern Pacific. It is the only trunk line built in Mexico with American capital without a subsidy. Believing that a road from the Rio Grande toward the Pacific Ocean would cross a section of the Republic of Mexico susceptible of great development, this company obtained certain concessions in 1881, modified in 1882 and 1883, and work was immediately commenced at Ciudad Porfirio Diaz, and 89.37 miles of the main line were completed, and also 10.84 of the Lampazos branch, thereby reaching the coal fields of San Felipe. The track of the main line to Torreon was completed January 12, 1888, and operation of the road was commenced two months later. The San Pedro branch was built in 1890, and the main line was completed October 1, 1892, to Durango, the capital of the State of Durango.

This road traverses the States of Coahuila and Durango, and will extend through Sinaloa to reach Mazatlan, on the Pacific coast. It touches Eagle Pass, Allende, Sabinas, Monclova, Trevino, Jaral, Paila, Torreon, and Durango. The length of the main line, Ciudad Porfirio Diaz to Durango, is 540 miles; of the branches, Sabinas to Hondo, 12.43 miles; Hornos to San Pedro, 14.35 miles; and Pedricena to Velardena, 5.82 miles.

Connections: At Eagle Pass, with the Southern Pacific Company for all points in the United States; at Allende, with stage for Zaragoza; at Sabinas, with stage for San Juan de Sabinas; at Felipe, with stage for Juarez and Progreso; at Baroteran, with stage for Villa de Musquiz (Santa Rosa); at Monclova, with stage for Cuatro Cienegas and Sierra Mojada; at Trevino, with the Mexican Gulf Railway for Monterey, Tampico, and points on the National; at Jaral, with stage for Saltillo, the capital of the State of Coahuila; at Paila, with stage for Parras; at Hornos, with stage for Viesca; at Torreon, with the Mexican Central Railway for all points on that line and its connections. A through train leaves Ciudad Porfirio Diaz daily at 4 p. m., arriving at Sabinas at 6.05 p. m.; at Monclova, 10.10 p. m.; at Trevino, 1.35 a. m. (second day); at Jaral, 2.52 a. m.; at Paila, 4.15 a. m.; at Hornos, 5.51 a. m.; at Torreon, 7.05 a. m.; at Pedricena, 9.51 a. m.; at Durango, 3 p. m. Train leaves Durango daily at 8.20 a. m., arriving at Pedricena 12.42 a. m.; at Torreon, 3 p. m.; at Hornos, 4.15 p. m.; at Paila, 6.04 p. m.; at Jaral, 7.30 p. m.; at Trevino, 9.01 p. m.; at Monclova 12.20 p. m.; at Sabinas, 3.20 a. m. (second day). A daily train leaves Ciudad Porfirio Diaz at 8 a. m., arriving at Monclova at 6.30 p. m. same day; returning, leaves Monclova at 7.15 a. m. and reaches Ciudad Porfirio Diaz at 6.30 p. m.

First-class passenger rates: From Ciudad Porfirio Diaz to Allende, \$2.10; to Sabinas, \$4.70; to Baroteran, \$5.80; to Monclova, \$9.55; to Trevino, \$14.40; to Jaral, \$16.40; to Paila, \$19.20; to Hornos, \$22.55; to Torreon, \$24.70; to Durango, \$34.80. From Durango to Torreon, \$10.20; to Paila, \$15.70; to Jaral, \$18.45; to Trevino, \$20.45; to Mon-

clova, \$25.30. From Torreon to Hornos, \$2.20; to Paila, \$5.60; to Jaral, \$8.30; to Trevino, \$10.35; to Monclova, \$15.20; to Baroteran, \$19; to Sabinas, \$20; to Allende, \$22; and to Piedras Negras, or Ciudad Porfirio Diaz, \$24.70. Baggage allowance on through tickets, 150 pounds, and on local tickets, 33 pounds.

Freight rates from Ciudad Porfirio Diaz to Durango, or vice versa, average for Class A, 10 cents; class 1, 9 cents; class 2, 6½ cents, class 3, 4½ cents, per ton (2,204 pounds) per kilometer (0.6214 mile). On car-load lots there is a reduction of 33 per cent on class 1; of 20 per cent on class 2, and 11 per cent on class 3.

Monterey and Mexican Gulf Railroad.—The original concession for this road is dated November 10, 1887, and gives the company the right to build to a port on the Pacific. The line extends from Trevino (formerly Venadito) on the International Railway, southeast through Monterey, Cadereyta, Montemorelos, Linares, and Victoria to Tampico, on the Gulf, a distance of 387 miles. It is a broad gauge, and traverses the States of Tamaulipas, Nuevo Leon, and Coahuila. The first portion of this road was opened from Monterey east on May 5, 1889; to Montemorelos, 68 miles, June 30, 1889; from Venadito to Villagran, 188 miles, on April 1, 1890; to La Cruz, 216 miles, August, 1890; to Victoria, 242 miles, October, 1890, and to Tampico, July 20, 1891.

Connections: At Trevino, with the International Railway for Torreon, Durango, and points north; at Monterey, with the Mexican National for points north and south on that road; at Tampico, with the Mexican Central for San Luis Potosi and Aguas Calientes, and with steamers for Gulf ports, United States, Havana, and Europe. Through trains leave Tampico daily for the north at 6 a. m., arriving at Victoria at 12.27 a. m.; at Linares, 4.36 p. m.; at Montemorelos, 6 p. m.; at Cadereyta, 8 p. m., and at Monterey, 9 p. m. Trains leave Monterey on the second day at 7 a. m., reaching Trevino at 10.04 a. m.; going south, trains leave Trevino daily at 1.45 p. m., reaching Monterey at 4.45 p. m.; leave Monterey, 5.55 a. m., and arrive the next day at Cadereyta at 6.57 a. m.; at Montemorelos, at 8.40 a. m.; at Linares, 10.26 a. m.; at Ciudad Victoria, 2.21 p. m., and at Tampico, 9.15 p. m.

A freight train leaves Tampico every day at 7.15 p. m., carrying a passenger coach, stopping over night at Ciudad Victoria and Monterey, and reaching Trevino at 12.45 a. m. on third day. From Trevino this train leaves at 1.30 p. m., and reaches Monterey at 6.40 p. m.; leaves Monterey 6.40 a. m., and arrives at Ciudad Victoria on the next day at 7.30 a. m.; reaching Tampico at 7.20 p. m. on the third day.

First-class passenger rates from Tampico are as follows: To Ciudad Victoria, \$9.59; to Linares, \$15.10; to Monterey, \$21.10; to Trevino, \$25.42. From Trevino to Monterey, \$4.33. From Monterey to Cadereyta, \$1.47; to Montemorelos, \$3.96; to Linares, \$6; to Ciudad Victoria, \$11.59; to Tampico, \$21.19. Baggage allowance is the same as that of the Mexican National.

Freight rates from Tampico to Trevino and vice versa are, for the first 100 kilometers (62.14 miles): Class A, 12 cents; class 1, 8 cents; class 2, 6 cents; class 3, 4 cents; then they average for Class A, 10 cents; class 1, 7 cents; class 2, 5½ cents; class 3, 3 cents, per kilometer (0.6214 mile) per ton (2,204 pounds). Car-load rates are: Class 1, 5½ cents; class 2, 5 cents; class 3, 3½ cents; but on the first 100 kilometers the rates are the same as above.

Mexican Southern Railway.—The company (English) operating this road was chartered on May 9, 1890, and a concession was obtained about a month later. In 1892 the line was completed to Tecomavaca, 140 miles from Puebla, and in March, 1893, work terminated at Oaxaca, making a total of 228 miles. It is narrow gauge, and traverses the States of Puebla and Oaxaca, and will eventually be built to Salina Cruz, on the Pacific Coast, and to Vera Cruz, on the Gulf. Its connections are: At Puebla, with the Mexican Railway and Interoceanic for Vera Cruz, Jalapa, Pachuca, Mexico City, and Izucar Matamoras; at Tehuacan, with Esperanza Railroad; at Oaxaca, with stage and private conveyances for Tehuantepec, Pluma, Hidalgo, Valle Nacional, Puerto Angel, ruins of Mitla, and the famous trees of Santa Maria del Tule.

Train leaves Pueblo at 6 a. m., reaching Tehuacan at 9.22 a. m., Tecomavaca at 12.29 a. m., Tomellin at 1.55 p. m., Oaxaca at 7 in the evening; leave Oaxaca at 6 a. m., reaching Tomellin at 11.07 a. m., Tecomavaca at 12.33 p. m., Tehuacan at 3.15 p. m., and Puebla at 7.40 in the evening.

First-class passenger rates from Puebla are: To Tehuacan, \$3.92; to Tecomavaca, \$6.89; to Tomellin, \$7.90; to Oaxaca and return, \$13.50. From Oaxaca to Tomellin, \$3.37; to Tecomavaca, \$4.38; to Tehuacan, \$7.35; to Puebla, \$11.23. A liberal allowance is made for baggage.

Freight rates from Puebla to Oaxaca, and vice versa, are: For class A, 12 cents; class 1, 6 cents; class 2, 4 cents; class 3, 3 cents, per ton per kilometer. Special rates given on car-load lots.

Hidalgo and Northwestern Railroad.—This road holds one of the first concessions granted, its date being January 28, 1878. The concession has since been modified several times. It is the pioneer line, connecting the Mexican Railway with the city of Pachuca. Within the last four years it has been extended to the City of Mexico. It is narrow gauge, and traverses the Federal District and the States of Mexico and Hidalgo. The line is finished to Acapulco, a few miles out from Tulancingo. From Acapulco it will pass by Huachinango, Xicotepec (in the State of Puebla), Bixcuintla, and Teahicatlan to Tuxpan, the second port of Vera Cruz. It touches Mexico City, Pachuca, and Tulancingo. The length of the main line, City of Mexico to Romeros (Tulancingo), is 77 miles; of branches, Pachuca and Irolo, 43.5 miles, Tizayucan to Teoloyucan, 16.15 miles.

Connections: At Mexico City, with Mexican National, Mexican Central, Interoceanic, and Mexican Railways; at Tizayucan, with Mexican Railway; at Teoloyucan, with Mexican National and Mexican Central;

at Pachuca, with Mexican Central, and Mexican Railway, and with stage for Real del Monte Mines; at Romeros, with stage for Tulancingo and Huachinango.

Trains leave Mexico City daily at 7.15 a. m. and 3.45 p. m., reaching Tizayuca at 8.31 a. m. and 5.01 p. m.; Tepa, at 9.24 a. m. and 5.53 p. m., arriving at Pachuca at 10 a. m. and 6.30 p. m.; leaving Pachuca at 7 a. m. and 3.30 p. m., they reach Tepa at 7.40 a. m. and 4.10 p. m.; Tizayuca at 8.31 a. m. and 5 p. m., and arrive at Mexico City at 9.45 a. m. and 6.15 p. m. Passengers going to Tulancingo must take the morning train (7.15) for Pachuca and transfer at Tepa (9.24 a. m.), reaching Tulancingo at 11.45 a. m. Going to City of Mexico, passengers leave Tulancingo at 1.15 p. m. and transfer at Tepa at 3.50 p. m., arriving at 6.15 p. m.

First-class passenger rates: From Mexico City to Tizayuca, \$1.59; to Tepa, \$2.45; to Pachuca, \$3.06; to Tulancingo, \$3.06. From Pachuca to Tepa, 67 cents; to Irolo, \$1.59; to Tizayucan, \$1.53; to Tulancingo, \$1.69; to City of Mexico, \$3.06. From Teoloyucan to Tizayucan, 72 cents. Baggage allowance is the same as given by the Interoceanic Railroad.

Freight rates from the City of Mexico to Irolo and Pachuca are the same as those of the Central and the Interoceanic; but to Tulancingo are: Class A, 12 cents; class 1, 8 cents; class 2, 6 cents; class 3, 4 cents per kilometer (0.6214 mile) per ton (2,204 pounds).

Sonora Railway.—The original concession of this road was obtained September 14, 1880, and modified in 1881 and 1882. It was opened from Hermosillo to Guaymas, 90 miles, November, 1881, and to Nogales, 262 miles, on October 25, 1882. The line is owned by the Atchison, Topeka and Santa Fe Railroad Company, and with the New Mexico and Arizona Railroad forms the Sonora division of the Atchison company's system of roads. It is standard gauge, and traverses the whole State of Sonora, touching Guaymas, Hermosillo, Magdalena, and Nogales and Benson, Ariz. Its connections are: At Guaymas, with steamers for Alamos via Agiabampo for Topolobampo, Altata, Mazatlan, San Blas, Manzanillo, Acapulco, La Paz and other points in Lower California, and with stage for the Yaqui country; at Hermosillo, with stage for Ures and Arispe; at Magdalena, with stage and private conveyance for Altar and Arispe; at Nogales, with stage for Tucson, Ariz.; at Benson, Ariz., with Southern Pacific for points east and west.

Trains leave Benson daily at 7.30 a. m., and reach Nogales at 12.15 a. m.; leave Nogales at 2.37 p. m., arriving at Magdalena at 9.10 p. m., Hermosillo at 6.04 a. m., and arrive at Guaymas at 12.14 a. m., second day. Going north, trains leave Guaymas daily at 1.40 p. m., arriving at Hermosillo at 7.20 p. m.; Magdalena, 3.50 a. m. (next day); Nogales, 8.20 a. m., arriving at Benson at 2.40 p. m.

The first-class passenger rate is 3 cents per kilometer (0.6214 of a mile). From Benson to Nogales the fare is \$4.33, United States currency; to Magdalena, \$6.48, Mexican currency; to Hermosillo, \$12.69,

and to Guaymas, \$17.01. From Guaymas to Hermosillo, \$4.32; to Magdalena, \$10.17; to Nogales, \$12.75; to Benson, \$17.01. Tickets can be bought from the Mexican Central from City of Mexico to Benson for \$78.02, Mexican currency. Local baggage allowance, 33 pounds; on through tickets, 150 pounds.

Freight rates per kilometer (0.6214 of a mile) are:

Distances.	Price per ton.			
	Class A.	Class 1.	Class 2.	Class 3.
1 to 150 kilometers	\$0.12	\$0.06	\$0.04	\$0.02
151 to 300 kilometers .....	.09			
151 to 400 kilometers .....		.05½	.03½	.02
301 to 500 kilometers .....	.05			
401 to 500 kilometers .....		.05½	.03½	.02
<i>In car-load lots.</i>				
1 to 75 kilometers .....		.05½		.02
1 to 150 kilometers .....	.10			
1 to 185 kilometers .....			.08½	
76 to 100 kilometers .....				.02
76 to 150 kilometers .....		.05½		
101 to 500 kilometers .....				.01½
151 to 225 kilometers .....		.04		
151 to 300 kilometers .....	.08			
186 to 400 kilometers .....			.02½	
226 to 300 kilometers .....		.03		
301 to 500 kilometers .....	.04	.02½		
401 to 500 kilometers .....			.02	

Mexican Northern.—The concession for this road was obtained March 20, 1890, and the company operating was chartered in the June following. The road was opened to Rincon in February, 1891, and the entire line (81.25 miles) was in operation by July of the same year. It is a broad-gauge road, and runs from Escalon, a station on the Mexican Central, in Chihuahua, to Sierra Mojada, a mining town in Coahuila. At Sierra Mojada connection is made with stage for Cuatro Cienegas and Monclova.

Trains run from Escalon daily at 4 p. m., reaching Sierra Mojada at 7.15 p. m.; leaving Sierra Mojada daily at 7.15 a. m., and reaching Escalon at 10.30 a. m.

The first-class passenger rate is 5 cents per kilometer from Escalon to Sierra Mojada; from Sierra Mojada to Escalon the fare is \$6.25. Baggage allowance, 15 kilograms (33 pounds).

Freight charges are: Special or class A, 12 cents; class 1, 10 cents; class 2, 7 cents; class 3, 5 cents per kilometer (0.6214 mile) per ton of 2,204 pounds in quantities less than a car load. For car-load lots 10 per cent reduction is made.

Alvarado Railroad.—The original concession for this road was granted on May 4, 1875, but was modified in 1878, 1888, and 1890. The route designated in the decrees was to be from the city of Vera Cruz to Alvarado, a distance of 70 kilometers (43.50 miles) south, with a branch to Anton Lizardo, and from some convenient point on the Rio San Juan, and opposite Alvarado, to proceed south, to connect with the Tehuantepec Railway. The road is in operation to Alvarado, and already located to Joltipan on the Tehuantepec Railroad. At Vera Cruz it

connects with the Mexican and Interoceanic railways for Jalapa, Cordoba, Orizaba, Puebla, Pachuca, and Mexico City, and with steamers for Gulf ports, Cuba, United States, and Europe; at Alvarado, with river steamers for Tlacotalpan, Cosamaloapan, Textepec, San Juan Evangelista, and San Andres Tuxtla, via Tlacotalpan, by animal conveyance.

Trains leave Vera Cruz daily at 11 a. m., arriving at Medellin at 11.50 a. m., and at Alvarado at 4.30 p. m.; returning, leave Alvarado at 7 7 a. m., arriving at Vera Cruz at 2 p. m.

First-class passenger rate, 3 cents per kilometer. First-class fare from Vera Cruz to Medellin, 46 cents; to Alvarado, \$2.14; from Alvarado to Medellin, \$1.68.

Freight rates: Special, 12 cents; first class, 6 cents; second class, 4 cents; third class, 3 cents per kilometer per ton of 2,204 pounds.

Manzanillo and Colima Railroad.—The original concessions of this road (from Toluca to the Pacific Ocean) were obtained by the Mexican National Railroad Company in 1872 and 1877, but, by subsequent arrangement, the Mexican National Construction Company took over the concession for building a line from Manzanillo, the best port in Colima, to some point in the interior. It is a narrow-gauge line and is operated to Colima, the capital of the State of Colima, having a length of 94 kilometers (58.41 miles). It connects at Manzanillo with steamers for Pacific Coast ports, and at Colima with stage or private conveyance for Zapoltan and Guadalajara.

Trains leave Manzanillo at 2 p. m., arriving at Colima at 6 p. m.; returning, leave Colima at 7 a. m., arriving at Manzanillo at 11 a. m.

First-class passenger rate, 4 cents per kilometer (0.6214 mile). First-class fare from Colima to Manzanillo, or vice versa, \$3.88.

Freight rates: Special, 12 cents; first class, 6 cents; second class, 4 cents; third class, 3 cents per kilometer per ton.

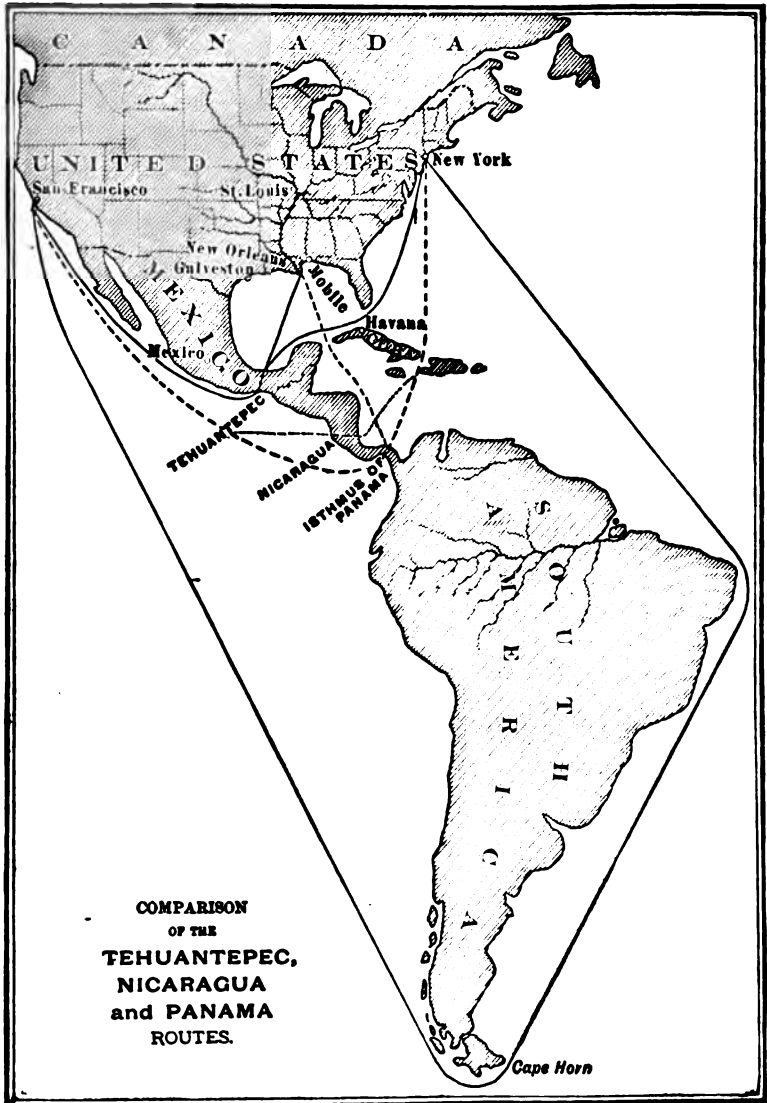
Sinaloa and Durango Railroad.—The original concession was granted August 16, 1880, and modified in 1881, 1882, 1886, and 1888. Under its first concession it was to have been an extensive system, from the port of Altata to the city of Durango, via Culiacan and many other interior points, and having various connections with coast towns northward. Only 61 kilometers (37.91 miles), however, have been built from Altata to Culiacan, and these are in operation in connection with two small steamers owned by the company engaged in the coasting trade.

Trains leave Altata daily at 6.30 a. m., arriving at Culiacan at 9.10 a. m.; returning, leave Culiacan at 6 a. m., reaching Altata at 8.30 a. m. At Altata trains connect with steamers for Pacific coast ports, and at Culiacan with stage and private conveyance for Sinaloa, Tamazula, Casa, and San Ignacio.

First-class passenger rate, 3 cents per kilometer (0.6214 mile). First-class fare from Altata to Culiacan, or vice versa, \$1.90.

Freight rates are: Special, 10 cents; first class, 7 cents; second class, 5 cents, third class, 4 cents per ton per kilometer (10.6214 mile).

Tehuantepec Railway.—This road, now within 25 miles of completion, is destined to be one of the most important in the Republic. The project was to build across the Isthmus of Tehuantepec and connect the Atlantic and Pacific oceans. The idea of a highway for this purpose is very old, dating from the time of Cortez. Surveys and plans have been



made from time to time, but those of Captain Eads take the first place. The first serious efforts to realize this great work began in 1879, when an American company obtained a concession, but, unfortunately, the company was declared bankrupt in 1882. In 1883 the Mexican Government undertook to build the road, and laid rails for a distance of

some 40 kilometers (24.85 miles). In 1889 and 1890 about 100 more kilometers (62.14 miles) of rails were laid under the McMurdo contract, and it was supposed that there remained only 100 kilometers more to build. In 1891 the McMurdo concession was rescinded and a new contract was made with Stanhope, Corthell & Hampson. By virtue of the authorization which Congress gave the Executive last fall, a contract was entered into with Stanhope & Corthell for the completion of the road. The completed line now measures over 255 kilometers (158.46 miles), and less than 25 miles are lacking for the termination of the shortest interoceanic line in Mexico. The road is broad gauge and traverses the States of Vera Cruz and Oaxaca, touching Coatzacoalcos, Minatitlan, Suchil, Tehuantepec, and Salina Cruz. At Coatzacoalcos it connects with steamers for Gulf ports, Havana, United States, and Europe; at Tehuantepec, with private conveyance for Oaxaca, Miahutlan, and Pachueta, and at Salina Cruz, with steamers for Tonalá, San Benito, and other Pacific coast ports.

There are no regular passenger trains running as yet, but two coaches are attached to freight trains carrying material, etc., which carry passengers (fare, 3 cents per kilometer = 0.6214 miles) to the end of construction, and then transfer by coach or private conveyance to other sections.

Tehuantepec Railway vs. Nicaragua and Panama canals.—In order that the commercial interests of the United States may know the distances saved between shipping points of the world, I append a table, approved by the Mexican Government and used by Minister Matias Romero in his pamphlet entitled *El Ferrocarril de Tehuantepec*:

From—	To—	Via Tehuantepec Railway.	Via Nicaragua Canal.	Via Panama Railway.
		Miles.	Miles.	Miles.
New York.....	San Francisco.....	4,926	5,661	6,107
New York.....	Puget Sound.....	5,647	6,524	6,855
New York.....	Sitka.....	6,347	7,113	7,555
New York.....	Behring Straits.....	7,788	8,524	9,101
New York.....	Acapulco.....	2,722	3,507	3,988
New York.....	Mazatlan.....	3,476	4,232	4,675
New York.....	Hongkong.....	11,597	12,313	12,645
New York.....	Yokohama.....	9,984	10,626	11,211
New York.....	Melbourne.....	11,068	11,357	11,471
New York.....	Auckland.....	9,345	9,745	9,813
New York.....	Honolulu.....	6,586	7,390	7,705
New York.....	Callao.....	4,661	4,312	3,873
New York.....	Guayaquil.....	4,141	3,774	3,393
New York.....	Valparaiso.....	6,370	5,774	5,387
New Orleans.....	San Francisco.....	3,561	4,776	5,415
New Orleans.....	Acapulco.....	1,454	2,681	3,296
New Orleans.....	Mazatlan.....	2,027	3,257	3,983
New Orleans.....	Callao.....	3,393	3,436	3,181
New Orleans.....	Valparaiso.....	5,040	4,899	4,644
Liverpool.....	San Francisco.....	8,274	8,783	9,071
Liverpool.....	Acapulco.....	6,076	6,639	6,952
Liverpool.....	Mazatlan.....	6,714	7,264	7,640
Liverpool.....	Auckland.....	12,584	12,577	12,777
Liverpool.....	Guayaquil.....	7,379	6,845	6,267
Liverpool.....	Callao.....	7,899	7,444	6,837
Liverpool.....	Valparaiso.....	9,356	8,908	8,301
Liverpool.....	Honolulu.....	9,895	10,522	10,670
Liverpool.....	Yokohama.....	13,223	13,758	14,175
Liverpool.....	Melbourne.....	14,113	14,499	14,436

These remarkable savings in distance, says Manuel Rivera, a distinguished Mexican civil engineer, will no doubt be found equivalent to a great saving in time as well as freight, and this is what constitutes the great commercial feature of this road. Therefore, when completed the road will be of great benefit to some of the commercial ports of the United States.

Minor railways.—Among the many railways partially built and in operation, the following may be mentioned briefly: Potrero Cedral, Vanegas and Rio Verde, with a branch to Matehuala and Catorce, mining centers, and a connection with the Mexican National Railway, having 86 kilometers in operation; the Michoacan and Pacific, from Maravatio, on the Mexican National Railway, to the Trojos mining district, 55 kilometers, with right to continue, according to the concession, to various points in Michoacan and to the Pacific Ocean, and also connect with the Interoceanic at Cuernavaca or Yantepec; the Salamanca, Valle de Santiago and Jaral, 35 kilometers in operation, from its connection with the Mexican Central at Salamanca; the San Marcos, on the Mexican and Interoceanic railways, and Nautla, on the Mexican Gulf, with branches to Zacapoaxtla and Perote, 76 kilometers in operation; the Esperanza and Tehuantepec, 50 kilometers, connecting with the Mexican Railway at Esperanza and at Tehuacan with the Mexican Southern (the Oaxaca Railroad); the Cordova and Tuxtepec, 51 kilometers finished, to connect with the Mexican Railway at Orizaba, its present terminus being Matzarongo, a celebrated rice and sugar hacienda (plantation) a few miles from the River Tonto; the Mexico, Cuernavaca and Pacific, 31 miles finished, which will extend from the City of Mexico to the harbor of Acapulco, touching Cuernavaca, Jojutla, Tlapa, and Ametepc. A part of the country through which this last road will pass abounds in long-leaf pine and oak, which will give it considerable traffic in supplying Mexico with fuel, for which there is a good demand. The Cuernavaca Valley is one of the heaviest sugar districts in Mexico. It also produces aquardiente, molasses, rice, fruits, etc. Cuernavaca is one of the most charming summer resorts of Mexico and was the favorite resort of Cortez and Maximilian. This road is being rapidly pushed to completion.

YUCATAN RAILWAYS.

The railways in the State of Yucatan merit special mention. They have been built mainly with native capital. Most of them are standard gauge.

Merida and Progreso.—The original concession for the Merida and Progreso (via San Ignacio) Railway was decreed by the Government on the 17th of January, 1874, and modified April 26, 1875. This road (36 kilometers (22.37 miles) in length) was opened in 1881. At Progreso it connects with the steamers for Gulf ports, United States, Cuba (Havana), and European ports. At Merida it connects with

branches of the same system for Akil (Peto Railroad) and Izamal; for Campeche, via Macaxoni, by animal conveyance.

Trains leave Progreso daily at 9.30 a. m., arriving at Merida at 10.45 a. m.; trains leave Merida at 7 a. m. and reach Progreso at 8.30 a. m. First-class fare either way, 77 cents.

Freight rates are: Special, 10 cents; first class, 6 cents; second class, 4 cents; third class, 2½ cents per kilometer (0.6214 mile) per ton of 2,204 pounds. These rates apply also to the Izamal railroad.

Merida and Peto.—The concession for this road was granted March 27, 1878, and modified in the years 1882, 1886, and 1888. The direction of the road is from Merida to Peto, via Ticul and Tekax, with Lake Chaukanah and Partido de los Chenes, in the State of Campeche, as objective points. The road is open to Akil, a distance of 99 kilometers (61.52 miles), although 104 kilometers (64.62 miles) are built. This is a narrow-gauge line.

Trains leave Merida at 2 p. m., arriving at Akil at 6.15 p. m.; trains leave Akil at 5 a. m., arriving at Merida at 9.20 a. m. First-class fare either way, \$2.02. Freight rates are: Special, 12 cents; first class, 6 cents; second class, 5 cents; third class, 4 cents per ton (2,204 pounds) per kilometer (0.6214 mile). These rates apply also to the Merida and Campeche Railroad.

Merida and Valladolid.—The original concession for this road was granted December 15, 1880, and modified in 1881, 1883, 1886, and 1888. The route designated in the decrees was to be from Merida to Valladolid, via Texkokob, Motul, Temax, and Cenoletto, with a branch road to Progreso and another from some point on the trunk line to Tizimin, via Espita. The road is opened from Merida to Progreso, a distance of 47 kilometers (29.21 miles); from Conkal to Tekax, 28 kilometers (17.40 miles); and from Conkal to Motul, 31 kilometers (19.26 miles).

Trains leave Merida at 5 p. m., arrive at Conkal at 5.30 p. m., and at Progreso at 6.30 p. m. Returning, trains leave Progreso at 2.30 p. m., arrive at Conkal at 3.30 p. m., and at Merida at 4. p. m. Trains leave Conkal at 6 p. m. and arrive at Tekax at 6.45 p. m.; returning, leave Tekax at 3 p. m., arriving at Conkal at 3.55 p. m. A train leaves Conkal at 5.40 p. m., arriving at Motul at 6.45 p. m.; returning, leaves Motul at 2.20 p. m., reaching Conkal at 3.55 p. m.

The first-class passenger rate is one-half cent per kilometer (0.6214 mile). Fare from Merida to Progreso, or vice versa, is 73 cents; from Merida to Conkal, 25 cents; from Conkal to Tekax, or vice versa, 43 cents; from Conkal to Motul, or vice versa, 48 cents.

Freight rates per ton per kilometer (0.6214 mile) are: Special, 10 cents; first class, 5 cents; second class, 4 cents; third class, 3 cents. -

Merida and Campeche.—The original concession for this road was granted September 14, 1880, but was modified in 1881, 1882, 1886, 1888, and 1889. The route designated in the decrees was to be from the city

of Merida to Campeche, via the town of Calkini, with a branch to Hunucma, and another to Mura. The road is open from Merida to Maxcanu, a distance of 59 kilometers, (36.66 miles), and from Campeche to Pomuch, a distance of 53 kilometers (32.93 miles), but 129 kilometers are built. This is a narrow-gauge line.

Trains leave Merida daily at 6 a. m. and arrive at Maxcanu at 8.30 a. m.; returning, leave Maxcanu at 7 a. m., reaching Merida at 9.15 a. m. Trains leave Campeche at 2 p. m., reaching Pomuch at 4.40 p. m.; returning, leave Pomuch at 6 a. m., arriving at Campeche at 8.40 a. m.

First-class passenger rate is 2 cents per kilometer. Fare from Merida to Maxcanu, or vice versa, \$1.21; and from Campeche to Pomuch, or vice versa, \$1.09.

Freight rates are the same as for the Merida and Peto Railroad.

Merida and Izamal.—The concession for this road was granted May 15, 1884; modified in 1886, 1888, and 1890. The route of this road is from Campeche to Izamal, via Tekanto, 67 kilometers (41.63 miles), and is now open for traffic.

Trains leave Merida at 6 a. m., reaching Izamal at 8.55; returning, leave Izamal at 6 a. m., reaching Merida at 8.55 a. m.

First-class passenger rate, 2 cents per kilometer (0.6214 mile). First-class fare from Merida to Izamal, or vice versa, \$1.37.

Freight rates are the same as for the Merida and Progreso Railroad.

2. NAVIGABLE RIVERS AND CANALS.

The first important river found in the extreme north of the Republic, on the Gulf side, is the Rio Grande, forming a portion of the boundary line between Mexico and the United States. It is navigable for a short distance from Matamoras to the interior for good-sized boats, and small craft ascend as far as 196 miles from this point.

There is communication on the Panuco River, between Tampico and Tantoyuquila, by steamboats, which, starting for the interior, run into the Guayalejo or Temesi, through the mouths of El Moralillo, and enter the Chairel Lake and the American Canal. For nearly the whole distance there is an average depth of more than 20 feet. Once in the Temesi, the average depth is a little over 16 feet to the San Francisco ranch, where the rocky bed leaves little more than 4 feet, rendering navigation extremely difficult and at night impossible. The canalization of the Temesi would be an easy task, the bottom being mostly of sand and mud, while the obstructions referred to could be blown up without difficulty.

Some years ago work was commenced on the Chijol Canal, between Tampico and Tuxpan. It is to be 250 miles long, and will be extended to the Lomas del Real, to drain the lagoons existing in the neighborhood, and thus improve the salubrity of Tampico. The connection of the Panuco with the Barbarena will be completed the required length and, with its completion, the abundant resources of the region will be made available. The Panuco itself is navigable for 80 miles.

▲ few months ago the Government made a contract with Emilio Rubio and Samuel Morales Pereira for the improvement and canalization of the River Tempoal, which empties into the Panuco close to Tampico. The new company organized for this important enterprise is authorized to work from the town of Panuco up the river. The work must be done so that the river may be fitted for traffic, the canalization of the river to be sufficient to allow the passage of boats of 60-tons burden. The company doing the work must finish it in proper shape within a specified time, and in payment for each kilometer of improvement made, the concessionaries are to receive from the Government 4,000 hectares (9,884 acres) of public land wherever desired, providing said work be approved by the secretary of public works.

The rivers Presas and Soto la Marina, in Tamaulipas, could be made navigable so as to reach, on the former, the towns of San Fernando and Mendez, and on the latter, the city of Soto la Marina. The Soto la Marina River receives the waters of numerous streams and of several rivers of considerable volume, and from the nature of its bed could be easily rendered navigable.

Among the lakes lying along the coast of Tamaulipas is the Laguna de la Madre, with a width varying between 10 and 26 miles. In view of its many communications with the Gulf, and with the fertile lands around it, its waters should be more largely utilized.

The Tuxpan River, in the State of Vera Cruz, which empties into the port having the same name, is navigable for about 60 miles, and, with a little dredging, a depth of 6 or 7 meters might readily be obtained.

The Papaloapam, San Juan, and Coatzacoalcos are open for vessels carrying from 8 to 12 feet. The Papaloapam is navigable for 90 miles; the San Juan for about 125 miles, and the Coatzacoalcos for more than 50 miles. On the Papaloapam and its tributaries, a franchise has been given to a Mexican company (Maclovio Ramos, No. 1 Angel street, City of Mexico, agent), with a subvention of \$3,600 annually, to run small steamboats twenty times a month between Tlacotalpam and Tuxtepec, touching at Cosamaloapam, and between Anton Lizardo and San Juan Evangelista. Besides these, there are six more boats, belonging to the Vives Hermanos (Alvarado), and José L. Perez y Francisco Cházaro Hijos (Tlacotalpam), plying between Alonzo Lazaro, Alvarado, Tlacotalpam, San Nicolas, Chacaltianguis and Tuxtepec.

The Papaloapam and its affluents are in the best possible condition for canalization; their waters are placid, their currents seldom exceed a mile an hour, and the territory through which they run contains some of the richest of lands.

The Coatzacoalcos and its tributaries would, by canalization, develop an immense traffic for over 100 miles in the interior; as by opening the channel to the easternmost part of Oaxaca, vast quantities of products would be carried over its waters.

Tabasco is not supplied with railroads, but nature has provided her with many waterways, which traverse the State in all directions. The

Tauchiocapa, Gonzalez, San Pedro, the majestic Grijalva, the Usumacinta, with its wealth of waters, and a large number of channels and streams, which by little labor and expense might be rendered navigable for vessels drawing 5 to 8 feet, would make together quite a system of navigation that would contribute not only to the welfare of that State, but also to that of Chiapas and Campeche.

From the Lake of Terminos, via Palizada, and by two different routes, the port of Frontera and the Usumacinta River may be reached. From Frontera, on steamboats following up the Grijalva, touching San Juan Bautista to Huimanguillo; and by changing to small crafts, ascent can be made on the Mescalapa to Tuxtla, and San Cristobal, the capital city of Chiapa, not far distant from the above towns, can be easily reached overland.

The Usumacinta joins the Grijalva at Tres Bocas, and runs thence toward the southeast, across the rich districts of Centro, Jonuto, Monte Cristo, Palenque, Balancan, and Tenosique. After penetrating the mountain region it becomes a boisterous torrent. The river's navigable length, about 125 miles, is almost three times that of the Grijalva, and the region which it waters is by no means inferior to the one drained by the latter. The waters of the Grijalva and Mescalapa, for a length of some 95 miles, penetrate the low mountains of Pichucalco, irrigate a section of country wherein the layer of tillable soil varies between 10 and 20 feet in depth, well watered by timely rains, and capable of producing, in the greatest abundance, all the useful plants of the tropical region. During the rainy season both the Grijalva and Mescalapa are apt to overflow, but this evil can be remedied by establishing regulating dikes at the Seco and the Conduacan. By deepening at some places the channel of the Mescalapa between San Juan Bautista and Huimanguillo, a permanent passage would be secured for vessels drawing from 6 to 10 feet from Frontera to the district of Huimanguillo.

On the rivers Grijalva and Usumacinta, franchises have been granted to two Mexican companies (Mauricio Horner and José Tamborrel, agents, City of Mexico), with a subvention of \$5,400 annually to the first one (Grijalva River Mexican Navigation Company) for the purpose of running small steamboats fifty-four times during the year between Atasta and La Palma on the Grijalva and Atasta and the Port of Chiltepec on the Gonzalez. A subvention of \$9,000 annually is given by the Government to the second one (Grijalva, Usumacinta and Palizada Mexican Navigation Company) to ply nine times a month from San Juan Bautista to Tenosique, on the Grijalva and Usumacinta, touching at Frontera, Palizada, Jonuto, Monte Cristo, and Balancan, and on the river Palizada from Palizada to the port of Carmen, in the State of Campeche.

In Campeche, the Lake of Terminos receives numerous rivers, some of which may be rendered navigable for short distances. Among them

are the Concepcion and the Mamantel, running through very rich forests. The Champoton, although naturally navigable for some distance, would, if rendered entirely fit for navigation, throw open to commerce the productive regions of the eastern part of that State. On the Pacific slope there are but few rivers that could be rendered navigable, owing to the short or turbulent course of most of them. Some, however, would repay the expense of improving their channels. The course of the Tehuantepec is 182 miles from its source in the district of Tlacolula (Oaxaca) to its mouth in the bay of La Ventosa, where it forms the port of the same name, the terminal point of the Tehuantepec Railway. The river runs through the thickly populated districts of San Carlos, Yautepec, and Tehuantepec, and its canalization would give life to an agricultural region which now lacks commercial activity. The Rio Verde undoubtedly admits of canalization for at least 62 miles of its course.

In Guerrero, the current of the few rivers emptying into the Pacific is for the most part too impetuous for navigation. The most important among them is Las Balsas, which, with its source in the State of Tlaxcala, has a length of 419 miles. Notwithstanding its volume of water, its rapid slope, and the sand bank it forms at the place where it discharges into the ocean, are serious obstacles to canalization; the expense attached to its improvement might, however, be justifiable in view of the rich resources in agriculture and stock raising of the thickly populated region through which it flows.

On the coasts of Colima, Jalisco, Sinaloa, and Sonora there are rivers of considerable importance for their volume of water, the length of their course, and the rich sections of country through which they run. The Coahuayana, Armeria, Chacala, Piginto, and San Pedro, are in favorable condition for canalization.

The Santiago may be utilized for a considerable distance. In this river there are obstacles, chiefly in the differences of level in its bed, presenting in some places fords with very rapid currents. These obstacles would call for sectional canalization, but with such a system the development of new industries and wealth in Jalisco and Tepic would provide for the well-being of many thousands of people.

The Mazatlan River is also in the best condition for canalization for about 62 miles, and this may also be said of the Culiacan, Sinaloa, and Fuerte.

Sonora has within its limits excellent rivers that may be turned to advantage for considerable distances. The Yaqui and Mayo both carry abundant water, have thoroughly good beds and outlets, and run through extensive and fertile plains, forming the tropical belt between the mountains and the sea.

The Colorado, emptying into the northern extremity of the Gulf of California, presents considerable difficulties. It will change its course at the caprice of a patch of sand, which, shifting now in one direction

and then in another, renders impossible, under present physical conditions, any permanent system of navigation. Nevertheless, a few flat steamboats ply its waters.

Such are the numerous rivers of Mexico, many of which are in the best possible condition for contributing to the development of the country, and for aiding great and profitable enterprises, especially as motor power.

3. PORTS AND HARBORS.

Nature has not been liberal in providing Mexico with available ports. On the Gulf coast there are open roadsteads where vessels at anchor are exposed to more or less danger, and bars and sand banks obstruct access to the shelters which the rivers would afford.

Matamoras, on the Mexican side of the Rio Grande, is a safe port, especially since the Government has completed works to prevent the periodical overflows which invariably follow the rainy season.

Tampico, at the mouth of the River Panuco, has been lately improved by the construction of jetties on the Eads system, and is now the finest harbor on the Gulf seaboard. From the mouth of the river, for 20 miles, the stream is about half a mile wide, with an average depth of 35 feet, forming a completely land-locked harbor, where vessels drawing 20 feet can ride in safety.

Leagued with the future of Tampico is the port of Tuxpan, which is situated at the mouth of the river of the same name. The entrance has been obstructed by a bar which carried a depth varying from 10 to 14 feet during the rainy season, but the Government has constructed two jetties from the shore seaward, and dredged a canal at the mouth of the river, at a total expense of \$283,680.

Vera Cruz was the principal port on the Gulf until Tampico was improved. It has a light-house on the southeast extremity of the castle on the Island of San Juan de Ulua. The anchorage ground is between the castle and the city, and affords very little security to vessels when the heavy "northers" sweep across the Gulf. The depth of water is sufficient only for vessels drawing about 19 feet; those which draw more have to anchor at the Island of Sacrificios, where there is greater depth and protection, but too far from the city for unloading cargo. To obviate this the Government is building a breakwater from the mainland to the Gallega reefs; another, on the Gallega reefs from the northwest extremity of the former to the eastern end of the fort on the Island of Ulua, and is dredging the channel thus formed. The total cost of these works is to be \$5,615,000.

Alvarado and Anton Lizardo have been declared by the Government engineers as high-water ports, both have good anchorage, and both are spacious harbors.

Tlacotalpam is on the banks of a lagoon, 15 miles southeast of Alvarado. Vessels drawing 13 feet of water can enter.

Minatitlan is 18 miles up the River Coatzacoalcos, on the Gulf side of the Isthmus of Tehuantepec. The river is navigable from the town to the mouth, having sufficient water for the largest vessels, though the bar prevents the entrance of ships drawing more than 12 feet. But in connection with the construction of the Tehuantepec Railway, the Government is making a channel of 26 feet depth which, together with piers, warehouses, etc., will probably cost \$4,000,000. Minatitlan, or properly speaking, Coatzacoalcos, will be a harbor destined soon to be the entrepôt for a large interoceanic business.

Frontera is the entrance to the River Grijalva, in the State of Tabasco. It is the port for San Juan Bautista, which is situated some distance up the river, to which point it has water for large vessels. The entrance is obstructed by a bar, with varying depth of water. During the rainy season it carries from 9 to 11 feet, and in the dry season only 7 feet. Large vessels have to anchor outside the bar, exposed to the "northers" and the heavy seas they create.

Campeche is an open roadstead, where vessels drawing 10 feet anchor about a mile from the shore, and those drawing over 15 feet, from 6 to 7 miles off.

Laguna de Terminos (Carmen) is a port formed by the island of Carmen. The anchorage is safe inside the bar, which carries from 12 to 14 feet of water, and obstructs the entrance to the lake. Large vessels anchor outside this bar and discharge and receive cargo from launches.

Sisal is an open roadstead, with good holding ground, although exposed to the northers. It was formerly the chief port of Yucatan, but the removal of the custom-house to Progreso has destroyed its foreign trade.

Progreso is another open roadstead where vessels anchor in 4 fathoms of water about 2 miles from the shore. It has a light-house, situated some 4 miles southeast from the anchorage off the town.

On the Pacific coast there are some good harbors:

San Benito, in the State of Chiapas, and close to the frontier of Guatemala, is an open roadstead.

Tonala, 120 miles northwest of the former port, is another open roadstead. The Government spent \$900,000 in building a pier at each of these ports, but the heavy gales which occur periodically on this coast destroyed them.

Ventosa, at the mouth of Tehuantepec River, and 25 miles from the town of the same name, is an open bay.

Salina Cruz, now the port on the Pacific end of the Tehuantepec Railway, is an open roadstead, and affords no shelter for vessels, but in the last contract made to terminate the Tehuantepec Railway the construction of an iron pier and a breakwater was included.

Huatulco, at the western extremity of the Gulf of Tehuantepec, is well sheltered from the southerly winds. A natural breakwater, in the shape of two islands lying opposite this port, has been the means of

forming a channel from 7 to 9 fathoms in depth. The Government, as well as the Mexican Southern Railway Company, could well afford to make this port the Pacific terminus of their respective roads.

Puerto Angel, south of the State of Oaxaca, is protected from the southwest winds, and the bay affords an anchorage of 12 or 13 fathoms of water. The landing, however, is somewhat difficult on account of the waves, which break heavily on the beach.

Acapulco, in the State of Guerrero, and the projected Pacific coast terminus of the Interoceanic Railway, is a fine land-locked harbor, sheltered on the north by mountains, which rise to the height of from 2,000 to 2,700 feet. The depth of water varies from 5 to 25 fathoms. There is no pier, and cargoes are discharged into launches, which carry them to the beach.

Manzanillo, in the State of Colima, is a small and comparatively safe port, which the Mexican National Construction Company will make the terminus of its railway from Guadalajara.

Chamela, in the Bay of Panela, State of Jalisco, is comparatively sheltered, except from the southerly winds, which prevail in July and August, when very heavy seas roll in.

San Blas, at the mouth of the Santiago River, is open to the full sweep of the Pacific Ocean; anchorage, 5 to 7 fathoms.

Mazatlan, in the State of Sinaloa, is one of the best ports on the Pacific coast, and is partially sheltered; anchorage, from 5 to 7 fathoms.

Altata, the terminus of the Culiacan Railroad, is partially sheltered; anchorage, 5 to 6 fathoms.

Playa Colorado is almost an open roadstead, where vessels anchor in from 5 to 7 fathoms, about 4 miles from the shore.

Guaymas, in Sonora, is at the mouth of a small river, which empties into the Gulf of California. It has a good bay, protected from the winds by surrounding hills. Vessels anchor close to the town, in about 3 fathoms of water.

La Libertad, north of Guaymas, has a safe and commodious bay, with sufficient water for all vessels.

Pichilingue is an extensive bay on the eastern coast of Lower California, and affords good anchorage, with deep water, and is a safe port.

La Paz is a bay in the same territory, where small vessels anchor about a mile from the shore; large ships anchor under the island of San Juan Nepomuceno, in 5 to 10 fathoms of water, about 9 miles out.

Ensenada de Todos Santos, on the west coast, is a bay, where there is comparatively safe anchorage, and partial protection for ships.

4. OCEAN LINES.

The development of maritime commerce, in connection with activity in the interior trade since 1877, has induced the Government to give it further impulse by granting concessions to various ocean transporta-

tion companies and individuals. Subsidies and special privileges have been given to the following companies:

The New York and Cuba Mail Steamship Company (American), J. Ritter, Gante, No. 1, Mexico City, and James E. Ward & Co., 113 Wall street, New York City, agents; has no subvention, but has special exemptions. Steamers make 104 trips (52 required) regularly from and to New York, Havana, Progreso, Vera Cruz, Tuxpan, and Tampico and Frontera and Campeche, alternately, reaching Havana in 4 days, Progreso 7 days, and Vera Cruz 9 days. First-class fare to Vera Cruz, \$55 gold, and to Mexico City, \$60 gold.

The German Imperial Mail, Busing & Co., Vera Cruz, agents; has no subvention, but has special exemptions. The line must make 12 voyages yearly, starting every month from Vera Cruz, for Tampico, Progreso, Havre, and Hamburg.

The Harrison Line and The West Indian and Pacific Steamship Company (English), Juan Ritter, Gante, No. 1, Mexico City, agent; have no subventions, but have special privileges; must make 12 voyages annually, starting monthly from Liverpool, and touching Paillac, Barbados, St. Thomas, Trinidad, La Guayra, Puerto Cabello, Curaçao, Santa Marta, Sabanilla, Cartagena, Port au Prince, Kingston, Colon, Vera Cruz, Tampico, and New Orleans, with the option of touching at Progreso, Campeche, and Tuxpan when necessary.

Romano y Cia. (Mexican), Indalicio Sanchez Gavito, No. 12, San Agustén, Mexico City, agent; receives a subvention of \$1,000 per round trip. Must make 36 trips annually between Tuxpan, Vera Cruz, Coatzacoalcos, Minatitlan, and Frontera, with the privilege of stopping at San Juan Bautista, Laguna, Campeche, Progreso, Tampico, and Tecolutla.

Spanish Transatlántica, José D. Bousquet, No. 3 Tiburcio, Mexico City, agent, has no subventions; but has special exemptions. These steamers make 36 through trips (12 annually required) between Vera Cruz, Frontera, Campeche, Progreso, Tampico, Tuxpan, Havana, Coruna, Santander, Cadiz, Barcelona, Liverpool, Havre, and New York. Leave New York on the 10th of the month for Havana, Progreso, and Vera Cruz; on the 13th for Havana, and on the 30th for Havana, Santiago de Cuba, Guayra, Puerto Cabello, Santa Marta, Puerto Limon, and Vera Cruz; leave Vera Cruz on the 4th for Progreso, Havana, Puerto Rico, and Spanish ports, connecting with its own steamers at Havana (here transferring with its own steamers) for New York and Spanish ports, and on the 24th for Progreso, Havana, and New York. First-class fare from Vera Cruz to Progreso, \$22.50, Mexican currency (round trip, \$33.75); to Havana, \$36 (round trip, \$54), and to New York, \$82.25 (round trip, \$116.25).

Compagnie Générale Transatlantique (French), E. Dutour, No. 12 Guardiola, Mexico City, agent; has no subvention, but special exemptions. These steamers make 52 trips (12 annually required as per con-

cession) and touch between Havre and Vera Cruz at Antwerp, Bordeaux, St. Nazaire, Santander, Corunna, New York, St. Thomas, San Juan de Puerto Rico, Puerto Plata, Cape Haitien, Port au Prince, Havana, Tampico, and New Orleans. Steamers leave New York for Mexico and Havana on the 1st of each month and leave Vera Cruz on the 12th of each month. First-class fare from Vera Cruz to Havana, \$30, Mexican currency.

New York, Mobile and Mexico Steamship Line (American), Emeterio de la Garza, 12 Rosales, Mexico City, agent; has no subvention, but enjoys special privileges. Steamers make monthly trips between Mobile and Tampico.

Gonzalez Direct Line (Mexican), Manuel Peniche, 4 Angel street, Mexico City, agent; enjoys special privileges. Steamers ply from Vera Cruz to New York, via Progreso and New Orleans, every month.

French Commercial Steamship Company, Lavie & Co., Mexico City, and F. J. Muñoz, Vera Cruz, agents; has no subvention, but special exemptions. Steamers leave Havre monthly, touching at Amberes and Bordeaux, reaching Vera Cruz about the 18th or 20th of the month; returning, they touch at Tampico and New Orleans.

M. Berreteaga & Co. Line (Mexican), Manuel Sanchez Marmol, 17 Cerca de Sto. Domingo, Mexico City, agent; has no subvention, but enjoys special exemptions. Steamers leave Vera Cruz for Progreso once a month.

Pacific Mail Steamship Company (American), H. J. Bulloy, New York City, Alex. Center, San Francisco, and B. B. Gorsuch, Mexico City, agents; has a subvention of \$2,500 a month. Steamers leave New York on the 10th, 20th, and 30th of the month, from pier foot of Canal street, North River, for Colon, where connection is made with the Panama Railroad. From Panama steamers leave for San Francisco, touching at San Benito, Tonalá, Salina Cruz, Port Angel, Acapulco, Manzanillo, San Blas, and Mazatlan. Steamers leave San Francisco on the 8th, 18th, and 28th for Panama, touching at the foregoing Mexican ports. First-class fare (in gold) from San Francisco to Mazatlan, \$45; to San Blas, \$50; to Manzanillo, \$50; to Acapulco, \$60; and to Puerto Angel, Salina Cruz, Tonalá, and San Benito, \$65.

Redo Line (Mexican), J. Redo, 22 Cadena street, Mexico City, agent; has a subvention of \$1,500 per round trip. Steamer *Alejandro* sails from Guaymas every month for La Paz, Altata, Mazatlan, San Blas, and Manzanillo.

Izaguirre & Co. Line (Mexican), Lauro de la Barra, Mexico City, agent; has no subvention, but enjoys special privileges. Steamer *Porfirio Diaz* makes 10 to 12 trips yearly between Manzanillo, Chamela, San Blas, Mazatlan, Altata, La Paz, Agiabampo, and Guaymas.

Sinaloa and Durango Railway Line (Mexican), Sebastian Camacho, No. 9 Empedradillo, Mexico City, agent; has no subvention, but enjoys special exemptions. Steamers *Mazatlan* and *Altata* run 3 times a

month from Manzanillo to San Blas, Mazatlan, Altata, Guaymas, and Agiabampo.

Pacific Coast Steamship Company (American), Goodall, Perkins & Co., No. 10 Market street, San Francisco, and Ignacio Sepulveda, 7 Gante street, Mexico City, agents; has no subvention, but enjoys special exemptions. Steamer *Newbern* leaves San Francisco on the 1st of each month for Ensenada de Todos Santos, Bahia de la Magdalena, San Jose del Cabo, La Paz, Guaymas, and Mazatlan.

There are other lines of importance which ply in Mexican waters, but enjoy no privileges whatever. Such lines are:

Morgan Line: Steamers leave Morgan City, La., for Vera Cruz, stopping at New Orleans, Galveston, and Matamoras, twice a month.

Maldonado Company, which makes from 12 to 30 trips yearly between New York and Progreso, and New Orleans and Progreso.

Steamers *Campechano* and *Ibero* make monthly trips between Vera Cruz and Progreso, stopping at Frontera, Laguna, Champoton, Campeche, and Celestum.

Royal Mail Steam Packet Company (English), making 24 trips annually between Vera Cruz and English ports.

Hamburg-American Packet Company (German), touching once or twice a month at Vera Cruz for European ports.

Steamer *Fenix* sails every month from Progreso for Campeche, Laguna, and Frontera.

Steamer *J. W. Wilson* runs between Vera Cruz and Tuxpan, and between Tuxpan, Tecolutla, and Ozones, once a month.

Steamer *Tlacotalpan* runs weekly between Vera Cruz, Tlacotalpan, and Alvarado.

Steamer *Yaqui* runs weekly between Guaymas and Medano on the River Yaqui.

The Sonora Railway Company runs two steamers twice a month between Guaymas, La Paz, Santa Rosalia, Agiabampo, Topolobampo, Mazatlan, Perihuate, San Blas, and Manzanillo.

The burden capacity of the steamers employed by the foregoing lines is not less than 2,000 nor more than 4,000 tons.

The Government seems to be now decided not to give any new concessions with subsidies, either for railroad or steamship lines. The commercial relations of Mexico with foreign countries have now attained such magnitude as to render it unnecessary to offer subsidies, and the maritime traffic is sufficient in itself to afford a reasonable profit for the steamship companies.

5. HIGHWAYS AND STAGE LINES.

Highways have not been the means by which Mexico has attained its present interior development. Good roads of any great length and easy wagon transportation have always been a matter of sheer impossibility, and the best efforts in this direction of the industrial rulers of Mexico have been frustrated by natural causes.

The extraordinary configuration of the country and the heavy rains during the summer would demand an enormous appropriation to maintain wagon roads in first-class order. The present administration has been aware of this, and to furnish a substitute it has offered inducements to railroad enterprises by subsidies, land grants, and special privileges, and this saves the country from a heavy burden in the shape of a road tax.

There are a few highways of importance which can be mentioned briefly. The historical road of Vera Cruz is one of the best. This road is wide, in some places 30 meters (98.43 feet) in width, and has an easy grade almost all the way through from Perote. Starting from Vera Cruz, it runs for some miles through great plains, and then begins to ascend gradually, until it reaches Jalapa (5,000 feet above the sea), 75 miles from Vera Cruz. Thence the ascent is at an incline of 5 feet in 100, winding upward in a perfect zigzag, until the edge of the high plateau is reached. After leaving Perote (about 8,000 feet above the sea level), the road widens again, and a plain about 50 miles long is crossed. At San Marcos the road branches south and west. In the former direction, it follows the Interoceanic Railway to Puebla and Tlaxcala; in the latter, it follows the Mexican Railway almost all the way to the City of Mexico, the grade being nearly level. This is the road that Cortes took in his famous invasion of the land of the Montezumas.

The Cuernavaca road is another relic of the olden times. A stage leaves Huipulco, on the Tlalpam steam line (Mexico City to Tlalpam), every day at 7 a. m. (fare, \$2.50), and reaches Cuernavaca at 3 p. m. The road from Huipulco, before ascending the hill to San Mateo, is wide, but dusty and sandy, and so continues to the next ascent at Topilejo. At this point one of the grandest of panoramas presents itself to the eyes of the traveler. The most important section of the Valley of Anahuac is before him. To the east, and dimly perceived through the heavy mists, the snow-clad sides of Popocatepetl can be seen; then, a little toward the north, the lower fleecy slopes of Iztacchuatl are visible; far to the northeast the waters of Lake Texcoco shine and glisten through the heavy moisture; and far to the north Tenochtitlan is faintly perceptible to the naked eye. After leaving the summit at El Guarda, nearly 10,000 feet above sea level, the road rolls up and down and becomes narrow until a grove of pine trees is reached beyond El Marquez. From here, remnants of the old road are met with until the hill town of Huichiloque is in sight. After leaving this antique town, the road is spacious and well taken care of, but descends at a fearful rate until Cuernavaca is reached. The descent is 3,000 feet, and the time taken one hour.

The old road from Mexico to Zacatecas, Guadalajara, and San Luis Potosi, which extends to El Paso, or Ciudad Juarez, is still in existence, but is not maintained by the Government. The different district and State authorities keep it up for local traffic.

The road from San Luis Potosi, via Tula, to Victoria, the capital of Tamaulipas, has lately been repaired by the Federal Government. From San Luis Potosi to the approaches of Guadalcázar, the road is fair, and then the country is mostly rolling, and in some sections the road is very narrow, 3 to 4 meters (9.8 to 13 feet) wide. An appropriation of \$10,000 was made more than nine months ago by the Oaxaca legislature toward completing the Oaxaca and Puerto Angel road. This is the south end of the original Tehuacan and Puerto Angel wagon road, which the Federal Government commenced many years ago. The Federal Government has abandoned its charge, and the Mexican Southern Railway will naturally supplant it for many years to come. From Puerto Angel to Pluma, a distance of 36 miles, this road is wide (20 meters=65 feet) and open; from Pluma to San Jose del Pacifico, a distance of 45 miles, the road begins to ascend rapidly, and the country assumes a rough appearance; the San Juan and Capalita rivers are crossed; then an ascent of 2,500 meters (8,135 feet) is made to the Cordilleras of Loxicha and beyond, on a slight descent, and 25 miles distant, the town of Miahuatlan is reached. The road follows the ridge above the Rio Verde, touching Ejutla and Ocotlan; then gradually descends, following the river, until Oaxaca is in sight, a distance of 75 miles and at an elevation of 1,544 meters (5,018 feet) above sea level. This road is considered as first class (by law, roads are first class when not less than 12 meters (39 feet) wide), and is one of the most important in the Republic, as it affords railway communications to Pochutla, Pluma, Juquila, and Miahuatlan, the best advanced and cultivated coffee district in Oaxaca.

Another road of importance is the one that connects Acapulco with Mexico City. From Puente de Ixtla, it follows the Amacuzac River. After leaving the vallejo, this road ascends the Sierra Madre range, touching Tixtla, and then descends to the plains along the coast. This road is mostly rough and narrow.

There are other highways of less importance; among them, I may mention that of Guadalajara, via Sayula and Zapotlan.

STAGE LINES.

The old stage line, Empresa de Diligencias, 1^a de Independencia 76, City of Mexico, which has gradually been giving up its routes to the different railways since 1882, is still in existence. This line runs the best coaches and has well-fed stock. From Mexico City to Cuernavaca, the stage leaves Huipulco every Monday, Wednesday, and Friday; returning from Cuernavaca, it leaves Thursdays and Saturdays.

An opposition line, office 19 San José el Real street, leaves from the same place on Thursdays and Saturdays, returning from Cuernavaca on Mondays, Wednesdays, and Fridays. Stage connects at Gallejo, on the Mexican Central in Chihuahua, for Ascension, distance 187 miles, 35 hours, fare \$15; starts on Mondays and Thursdays; starts also, on same days, for Casas Grandes, 90 miles, time 16 hours, fare \$7.

Stages connect at Chihuahua with the Central for Guerrero, distance 185 miles, time 35 hours, fare \$15, departing Mondays and Thursdays; for Cusihuiriac, distance 70 miles, fare \$10, time 14 hours, departing Mondays and Thursdays; for Rosario and Batopilas, distance 150 miles, time 25 hours; fare to Rosario \$13, and to Batopilas \$15; departing Mondays and Thursdays.

Stages leave the following places at the times specified:

Jimenez, for Allende and Parral, distance 62 miles, time 10 hours; fare to Allende \$3.50, and to Parral \$5, departing daily.

Simon, for San Juan de Guadalupe, State of Durango, distance 12½ miles, time 2 hours, fare 50 cents, departing daily.

San Bartolo, for Rio Verde, San Luis Potosi, distance 30 miles, time 5 hours, fare \$2.50, departing Tuesdays and Fridays.

Zacatecas, for Jerez, distance 37 miles, time 5 hours, fare \$1.25, departing daily.

Las Tablas, for Ciudad del Maiz, distance 30 miles, time 5 hours, fare \$2, departing Wednesdays and Saturdays.

La Barca, for Zamora (Michoacan), distance 30 miles, time 5 hours, fare \$2, departing daily excepting Sundays; for Atotonilco, distance 22½ miles, time 4 hours, fare \$1, departure daily excepting Sundays.

Guadalajara, Jalisco, for Magdalena, distance 65 miles, time 24 hours, fare \$4, departure Mondays and Thursdays; for Tepic, distance 150 miles, time 50 hours, fare \$16, departure Mondays and Thursdays; for Mazatlan, distance 300 miles, time 100 hours, fare \$30, departure Mondays and Thursdays; for Ameca, distance 60 miles, time 24 hours, fare \$4, Mondays and Wednesdays; for Zapotlan, via Sayula, distance 120 miles, time 48 hours, fare \$7, departure Mondays, Wednesdays, and Fridays.

Atequiza, for Chapala, distance 12½ miles, time 2 hours, fare \$1, departure daily.

San Juan del Rio, Queretaro, for Cadereyta, distance 30 miles, time 4½ hours, fare \$1, departure Mondays, Wednesdays, and Fridays.

Allende, on the International Railway, for Zaagoza, Coahuila, distance 12 miles, time 3 hours, fare \$1.50, departure daily.

Sabinas, for San Juan de Sabinas, distance 15 miles, time 3 hours, fare \$1.50, departure daily.

Telipe, for Juarez and Progreso, distance 30 miles, time 5 hours, fare \$2.50, departure daily.

Barroteran, for Santa Rosa, distance 25 miles, time 4 hours, fare \$2, departure daily.

Monclova, for Cuatro Cienegas, distance 47 miles, time 8 hours, fare \$4; for Sierra Mojada, distance 155 miles, time 35 hours, fare \$15, departure Mondays and Wednesdays.

Jaral, for Saltillo, distance 42 miles, time 7 hours, fare \$3.75, departure daily.

Pailla, for Parral, distance 16 miles, time 3 hours, fare \$2, departure daily.

Hornos, for Viesca and San Pedro, distance 15 miles, time 3 hours, fare \$2, departure daily.

Jimulco, on the Mexican Central Railroad, for Corralitos and Tapias, departure Sundays, Wednesdays, and Fridays.

Stages connect with the Mexican Central Railroad at Fresnillo for Sombrerete, distance 65 miles, time 1 day, fare \$4; at Zacatecas for Villa Nueva, distance 65 miles, time 12 hours, fare \$1.25, departure daily; at Encarnacion, Jalisco, for Teocaltiche, distance 36 miles, time 7 hours, fare \$2, departure daily; at Lagos for Ojuelos, distance 75 miles, time 1 day, fare \$5, departure daily; at Leon, State of Guanajuato for Piedra Gorda, distance 54 miles, time 7 hours, fare \$2, departure daily; at Silao for San Pedro (Piedra Gorda), distance 54 miles, time 1 day, fare \$1, departure Tuesdays, Thursdays, and Saturdays; at Salamanca for El Valle de Santiago, distance 21 miles, time 2½ hours, fare 50 cents, departure daily; at Celaya for Cortazar, distance 16 miles, time 3 hours, fare 50 cents, departure daily; and for Santa Cruz, distance 22 miles, time 4 hours, fare 75 cents; at Queretaro for San Jose Iturbide, distance 42 miles, time 7 hours, fare \$1.25, departure Mondays, Wednesdays, and Fridays; at Tula, Hidalgo, for Ixmiquelpan, distance 40 miles, time 8 hours, fare \$3, departure Mondays, Wednesdays, and Fridays; and for Mixquahuala, distance 21 miles, time 4 hours, fare \$1.50, departure Mondays, Wednesdays, and Fridays.

On the Sonora Railroad stages connect at Magdalena for Altar and Caborca; at Hermosillo, for Ures and Arizpe; and at Guaymas, for Alamos, Fuente, Sinaloa, and Mocorito.

THOS. T. CRITTENDEN,
Consul-General.

CITY OF MEXICO, *May 25, 1894.*

CENTRAL AMERICA.

GUATEMALA.

OCEAN LINES.

(1) Pacific Mail Steamship Company, a corporation of New York City; termini and main points, San Francisco, north, and Panama, south, touching at all Mexican and Central American ports, making 12 calls per month at all the principal ports; total length of line, 3,800 miles; condition of line, good; 14 vessels, averaging 3,000 tons, with an average horsepower of 600; rates for passengers, \$75 in gold from San Francisco to Panama; for freight, \$8 per ton from San Francisco to Panama; rates from San Francisco to New York, via Panama, for passengers (first class), \$120 in gold; for freight, \$18 per ton.

(2) New York, Belize and Central American Royal Mail Steamship Company, owned by British subjects; terminal points, New Orleans

and Puerto Cortez, Honduras, touching at principal points in British Honduras and Guatemala; total length of line, about 1,000 miles; 4 vessels, averaging 500 tons each, and 175 horsepower; passenger rates, \$30 in gold to all points; freight rates, 50 cents per 100 pounds; one weekly trip each way.

RAILWAYS.

Guatemala Central Railroad, owned and controlled by an American corporation; termini, Guatemala City and San Jose; length of line, 75 miles; condition of line, good; single track, narrow gauge; one train each way daily; passenger fare, about 4 cents per mile in gold, first class; rates on freight vary according to bulk, weight, etc.; highest grade on this road is $3\frac{1}{2}$ per cent.

D. LYNCH PRINGLE,
Consul-General.

GUATEMALA, *April 2, 1895.*

BRITISH HONDURAS.

OCEAN LINES.

The only mail steamship company that connects with this colony is the New Orleans and Belize Royal Mail and Central American Steamship Company. This line is under contract with the British Honduras Government. The company has five steamships owned and controlled in New Orleans. The line has been in existence for the last thirteen years, and, with the exception of one vessel, all are under the flag of the United States. The passage from New Orleans to this port is \$25; freight rates average 75 cents per barrel.

The distance from New Orleans to this port is about 900 miles. The steamers leave New Orleans every Thursday morning, arriving in Belize every Monday morning, and leaving Belize the same afternoon for Stann Creek (40 miles) and Monkey River (84 miles). From Monkey River, the steamers proceed to Puerto Cortez, in Spanish Honduras, arriving there on Tuesdays; and leave that port at midnight for Livingston, Puerto Barrios, and San Tomas, in Guatemala. Returning to the colony, the steamers call at Punta Gorda, Monkey River, Settie River, Stann Creek, Mullens River, and Belize, clearing for New Orleans every Friday at 1 p. m.

The line is in first-class condition, as the vessels come under the United States inspection.

There is a line of steamers making irregular trips to this port from New York, controlled by James Rankin, 19 Whitehall street, New York.

The Harrison Line of steamers, clearing from Liverpool, call at this port about once a month. They also call at all West India ports; returning, they call at Mexican ports and then at New Orleans.

COAST LINES.

There is only one coast steamer, the American stern-wheel steamer *Freddie M.*, under contract with this Government to carry the mails to the northern part of the colony. She makes a trip once a week; distance, 136 miles.

RAILWAYS AND HIGHWAYS.

There are no railways in British Honduras.

There are no highways in the colony. Such "roads" as do exist are the old truck paths, which were used for hauling out timber.

There are no telegraphs in this colony.

JAMES LEITCH,
Consul.

BELIZE, *May 18, 1894.*

HONDURAS.

RAILWAYS.

In 1868 an English company having obtained a concession from the Government of Honduras for the construction of an interoceanic railroad from Puerto Cortez, the main port of entry on the north coast, to Amapala, the port of entry on the Pacific coast, commenced work at the former place. When 57 miles had been completed, the Government, unfortunately, authorized an issue of bonds. The company having sold \$30,000,000 worth of the bonds, discontinued the work, and left the Government saddled with an enormous debt. Soon afterwards the bridge over the Chamelicon River was destroyed by a flood, thus rendering useless the 20 miles of road beyond San Pedro Sula. The 37 miles of road between this place and Puerto Cortez is all that the country can boast at present, though there is a prospect that the road will, before a great while, be continued to Comayagua and, later, to Amapala.

HIGHWAYS AND FREIGHTS.

The remaining highways of the country are cart roads and mule trails. In 1885-86, the following cart roads were constructed by the Government: (1) From San Lorenzo and La Brea to the capital, Tegucigalpa, a distance of 32 leagues (the league, as fixed by the laws of Honduras is, approximately, 2.6 English miles); (2) from Tegucigalpa to San Juan-cito, 7 leagues; (3) from Tegucigalpa to Yuscaran, 16 leagues; (4) from Tegucigalpa to Comayagua, 24 leagues, and Santa Barbara, 54 leagues. In addition to these roads constructed by the Government are (5) a cart road from San Pedro Sula to Venado, a distance of about 12 leagues; (6) one from San Pedro Sula to Macuelizo, 20 leagues; and (7) a road from San Lorenzo to Cholteca. A road of about 12 leagues would connect No. 4 with either 5 or 6, thus giving a through cart road from San Pedro Sula to the capital.

All freight for Tegucigalpa, Comayagua, and the neighboring part of the country is brought in by way of Amapala. From this place it is carried by means of a steam tug and rowboats to San Lorenzo and La Brea, the depots on the mainland, each about 6 leagues from Amapala. From these points it is carried either on pack mules or in ox carts, the latter being used only for articles too large to be carried on mules. Travelers may reach the capital either by way of Amapala and San Lorenzo, or by way of Puerto Cortez and San Pedro Sula. The journey on mule back from San Lorenzo to Tegucigalpa requires about three days, and that from San Pedro Sula to Tegucigalpa, about seven days.

All goods having inland places for their destination should be packed so as not to weigh more than 130 pounds to the piece, as about 260 pounds constitutes a mule cargo. The cost, freight and agent's charges, on a cargo of 260 pounds, from Amapala to San Lorenzo, is 6 pesos (\$2.73). The cost on cargo from San Lorenzo to Tegucigalpa is from 5½ to 10 pesos (\$2.58 to \$4.50), depending on the season. The cost on freight carried by carts, from San Lorenzo to Tegucigalpa, is from 1½ to 1½ pesos (57 to 68 cents) for each arroba (25 pounds). Travelers making the trip from San Lorenzo to Tegucigalpa, have to pay about 8 pesos (\$3.64) for a mule and 10 (\$4.55) for the attending "mozo." The passenger fare over the railroad from Puerto Cortez to San Pedro Sula is 2½ pesos (\$1.14), and the freight rate is 1 centavo (.0455 cent) a pound. Mules for making the trip from San Pedro Sula to Tegucigalpa can be hired for about 20 pesos (\$9.10) each, and an attendant for about 15 pesos (\$6.83). In addition to the charges mentioned, the traveler is expected to provide food for attendant and mules along the way.

The cart roads mentioned above are for the most part rough, mountainous roads, with many steep ascents and descents. Few of the swift mountain streams have bridges over them, and the crossing of some of them is, during the rainy season, often attended with difficulty and risk. The roads made by the Government were made under contracts providing that they should be 4 yards wide, or where the way had to be cut through rock, 2 yards wide. That portion of the Tegucigalpa and San Lorenzo road between Tegucigalpa and the mountain of Cerro de Hule, is a first-class highway, wide and smooth, and provided with excellent wooden and stone bridges.

WM. M. LITTLE,

Consul.

TEGUCIGALPA, *March 29, 1895.*

SALVADOR.

In compliance with Circular No. 150, I have the honor to report that there are no through lines of traffic in the Republic of Salvador.

ALEXANDER L. POLLOCK,

Consul.

SAN SALVADOR, *July 3, 1894.*

NICARAGUA.

All lines mentioned in this report are entirely controlled by either private corporations or individuals. With the exception of the steamships running between Philadelphia and Bluefields, all vessels mentioned herein carry the mails, and all carry freight. Many vessels mentioned are not advertised to carry passengers, but a limited number of passengers can be accommodated on any vessel mentioned in the report. The freight rates reported are those charged for carrying ordinary goods and merchandise.

The money referred to in the report is that of the United States.

OCEAN LINES.

San Juan del Norte and Bluefields are the only seaports in the consular district.

Four steamships run regularly between New Orleans and Bluefields, two sidewheel and two screw-wheel vessels, each steamship making the round trip in from sixteen to twenty days. The sidewheel vessels are run by the Southern Pacific Railway Company and are of 537 and 575 tons burden, respectively. The screw-wheel vessels have a tonnage of 362 and 496, respectively, and are run by the Bluefields Banana Company. Seven other screw-wheel steamships run regularly to Bluefields, four from Mobile and three from Philadelphia. The tonnage of these vessels is 323, 369, 448, 563, 321, 459, and 475, respectively. Each of the seven vessels makes the round trip in about twenty days. The speed of steamships running to Bluefields is from 9 to 12 miles an hour.

Passenger rates between New Orleans and Bluefields are \$40 first class and \$20 second class. Freight rates are \$10 per ton, and 20 cents per cubic foot. The rates to and from Mobile are the same as the New Orleans rates. The consular agent at Bluefields has failed to obtain definite figures, but reports that the passenger and freight rates on the Philadelphia ships are a little higher than the New Orleans rates.

The Merchants' Line, of New York, has two screw-wheel iron steamships, of about 360 tons burden each, engaged in the San Juan del Norte and New York trade, each vessel making the round trip in twenty-eight days.

The Prince Line sends a screw-wheel iron steamship from New York to San Juan del Norte every twenty-eight days. The vessels sent by this line to San Juan del Norte are of about 2,000 tons burden. Their speed, like that of the Merchants' Line ships, is from 9 to 12 miles an hour.

Passengers and freight for San Juan del Norte are also carried on the Colombian Line steamships, one of which sails from New York to Colon every ten days. At Colon passengers and freight destined for San Juan del Norte are transferred to either the British Royal Mail or

the Colombian Steamship Company's vessels. Each of the two lines last mentioned has but one sailing a month from Colon to San Juan del Norte, and passengers from New York to San Juan del Norte via Colon should time their departure from New York so as to avoid unnecessary delay in Colon.

Passenger rates from New York to San Juan del Norte are from \$60 to \$75, first class, one line charging less than the others. Freight rates are from \$8 to \$10 per ton, and 20 cents per cubic foot.

Once a month a British Royal Mail steamship arrives at San Juan del Norte from England. These vessels first touch at Colon. They vary in size and speed, the same ship never making successive trips to San Juan del Norte.

Passenger rates between England and San Juan del Norte are \$146.25 first class and \$97.50 second class. Freight rates are from \$7.30 to \$11 per ton from England, and from \$7.30 to \$14.60 per ton to England.

A screw-wheel iron steamship of about 300 tons burden and 10 miles speed is run once a month to San Juan del Norte and Bluefields from Colon and ports farther south by the Caribbean Steamship Company.

From Colon to San Juan del Norte freight is carried for \$5 to \$10 per ton and cabin passengers for \$15 to \$23.20. Freight rates from San Juan del Norte to Bluefields are \$5 per ton, and passenger rates are \$6.

Owing to the bar at the mouth of the river, steamships can not enter the harbor at San Juan del Norte, and the landing of passengers and freight is effected by tug and scows respectively. Passengers are charged \$1.25 each for passage on the tug. The lighterage charges are \$2 to \$3 per ton. Most of the freight and passenger business between San Juan del Norte and Bluefields is done by small sailing vessels of from 3 to 8 tons burden. These vessels carry passengers for \$3 each, and ordinary bales and boxes for 50 cents a package.

RAILWAYS.

There are no railways in the consular district of San Juan del Norte. The Nicaragua Canal Company constructed a few miles of railway when the canal work was in progress, but the track is now overgrown with underbrush. In the Managua district there is combined railway and steam-vessel connection between Corinto, on the Pacific, and Granada, at the head of Lake Nicaragua.

NAVIGABLE RIVERS AND CANAL LINES.

A small stern-wheel steamer runs on the river between the towns of Rama and Bluefields, a distance of about 55 miles. The consular agent at Bluefields has not reported freight and passenger rates.

The Nicaragua Steam Navigation Company runs six steamers on the San Juan River, carrying from 30 to 100 tons of freight each. The same company runs a steamer of 125 tons burden and 9 miles speed on Lake Nicaragua. Two of the river boats are constructed of steel and

four of wood. The lake steamer is constructed of iron. Each is a stern-wheeler. The lake steamer makes but three trips a month between Granada and the foot of the lake. The small steamers are constantly employed on the river between the foot of the lake and San Juan del Norte carrying freight.

It takes from three to five days to make the run from San Juan del Norte to the foot of the lake.

Passenger rates between Granada and San Juan del Norte are \$12.50 first class, and \$5 second class. Freight rates are as follows: Wire, 50 cents per cwt.; flour, 40 cents per half barrel; kerosene, 50 cents per case of 10 gallons; ordinary freight, \$12.50 per ton and 20 cents per cubic foot.

THOMAS O'HARA,
Consul.

SAN JUAN DEL NORTE, *January 1, 1894.*

NICARAGUA CANAL.

The proposition to build a ship canal across the Isthmus of Nicaragua, connecting the waters of the Atlantic and Pacific, may be said to have originated with the great explorer and scientist, Alexander von Humboldt, who expressed himself most favorably as to the advantages of the Nicaraguan route. Since Von Humboldt's time, various efforts have been made to undertake the work, but it was not until the Maritime Canal Company of Nicaragua obtained a concession from the Government of that country that it was actually begun. The company was chartered by act of Congress in 1889, and was organized May 4 of that year. The work of construction had already been commenced, and it continued until the summer of 1893, when it was suspended for want of funds. The termini of the canal are San Juan del Norte, or Greytown, on the Atlantic, and Brito on the Pacific. The length of the canal from port to port will be 169½ miles, of which 26¾ will be excavated channel and 143¾ the improved navigation of rivers, lakes, and basins. The summit level is that of Lake Nicaragua, 110 feet above the sea. There will be three locks near either end. The water courses followed are those of the San Juan River and Lake Nicaragua.

The foregoing statements were compiled from the Handbook of Nicaragua, published by the Bureau of the American Republics in 1893, Chapter VI.

During the third session of the Fifty-third Congress (1895), action was taken for a United States Government survey of the canal by the insertion of the following in the sundry civil appropriation bill:

For the purpose of ascertaining the feasibility, permanence, and cost of the construction and completion of Nicaragua Canal by the route contemplated and provided for by an act which passed the Senate January twenty-eighth, eighteen hundred and ninety-five, entitled "An act to amend the act entitled 'an act to incorporate the Maritime Canal Company of Nicaragua,' approved February twentieth, eighteen hundred and eighty-nine," twenty thousand dollars, to be expended under the direction of the Secretary of State.

And a board of three engineers is hereby constituted to make the survey and examination necessary for such ascertainment; said board to be selected and appointed by the President of the United States, one from the Corps of Engineers of the United States Army, one from the engineers of the Navy, and one from civil life; and the compensation of the members of said board shall be fixed by the President, not to exceed five thousand dollars each, including such pay as the engineers so selected are receiving, for the time they are so employed, from the Government. And the said board, under such arrangements and regulations as shall be made by the Secretary of State, with the approval of the President of the United States, shall visit and personally inspect the route of the said canal, examine and consider the plans, profiles, sections, prisms, and specifications for its various parts, and report thereon to the President; and should they ascertain that any deviation from the general line of the proposed route is desirable, they shall so state in their findings and conclusions with regard thereto in their report.

And said board shall make their report on or before November first, eighteen hundred and ninety-five.

COSTA RICA.

RAILWAYS.

There is but one railway in Costa Rica, the Costa Rican Railway, running from Port Limon to San Jose, the capital, and from San Jose to Alajuela, which is the terminus of the road in the interior. This railroad is controlled by a limited liability company in London.

The termini and main points touched, with distances apart, are as follows:

	Miles.
Limon to Matina.....	21½
Matina to Reventazon.....	17½
Reventazon to Cartago.....	51
Cartago to San Jose.....	14
San Jose to Heredia.....	6
Heredia to Alajuela.....	7
Total.....	117

The condition of the line is first class from Limon to San Jose, being a single-track line, steel rails throughout, and well ballasted; partly laid with steel ties. The section from San Jose to Alajuela is gradually being placed in the same excellent condition. The gauge is 3.6 feet.

In accordance with the terms of the concession, there is one train daily between San Jose and Limon, stopping at all stations. Between San Jose and Cartago and Alajuela there are three trains daily.

Rates for passengers are: First class, 8 cents; second class, 6 cents, Costa Rica currency, or, say, 3¼ cents and 2½ cents in gold, per mile, respectively.

The rate for freight is 20 cents, gold, per ton per mile, whether short or long haul.

The road from Limon to San Jose follows the Reventazon River for about half the distance, and the engineering difficulties were very great, but were overcome at much expense to the original projectors.

The road ascends from the sea level to an altitude of 4,997 feet at the highest point touched, between Cartago and San Jose; the capital being situated on the Pacific slope, though near the center of the Republic.

HIGHWAYS.

There is a road from Alajuela to Puntas Arenas, on the Pacific side, but it does not merit the name of a through line for traffic, being simply a first-class cart road.

HARRISON R. WILLIAMS,
Consul.

SAN JOSE, COSTA RICA, *January 1, 1894.*

WEST INDIES.

No reports in response to the Department circular having been received from the West India Islands, the following information has been compiled from Special Consular Reports "Streets and Highways," from the monthly issues of Consular Reports, and from other sources indicated in footnotes or in the body of the text.

BAHAMAS.

Consul McLain, of Nassau, reported to the Department November 28, 1890:

"The Bahama Islands are composed of coralline limestone, and the surface of this natural rock forms the street or roadway. There is no depth of soil, the rock itself being often fully exposed to view. All that is done to construct a street or roadway is to remove such sparse brush or chaparal as may be growing thereon (the rock itself being so porous and full of crevices and fertilizing elements as to sustain considerable vegetable growth with little, if any, soil), smooth down any sharp projections of rock, and fill up depressions with small pieces of the broken stone. As a result you have a reasonably smooth roadway of solid stone, which will meet all the requirements of the people.

"In the outlying islands of the colony there are comparatively few roads, and such as exist are little more than pathways cut through the bush, wide enough to permit the passage of a single two-wheeled farm cart, which is about the only vehicle in use. The fact that the islands are generally of considerable length and narrow renders roadways less necessary, the people owning their boats and passing easily from point to point along the shore.

"In the island of New Providence, whereon is situated the capital, the city of Nassau, a town of about 12,000 inhabitants, more attention

is paid to streets and roadways, but here, as elsewhere, the solid rock forms the street or road.

"The original cost of the streets is not great, as there are no difficult problems of grade, sewerage, or engineering, and the cheapest and rudest form of labor is used in their construction. There are few streams or ravines requiring culverts or bridges.

"No obstruction to uninterrupted travel ever arises from the wet or muddy condition of streets or roads in the Bahamas, since the soil, where any exists, is too thin and sandy to retain water, and the bed-rock is so porous as to absorb within a few hours the heaviest tropical downpour of rain.

"The extent of streets in Nassau is about the same as is found in towns of the same population in the United States; while the total length of the roadways, under public control, on the island of New Providence, outside of this city and its immediate suburbs, I should estimate as not to exceed 45 or 50 miles.

"The island itself is about 20 miles in length, with an average width of perhaps 5 miles. Two years ago there was less than one-third of the island under cultivation and hence no great need for country roads; but now large tracts are being planted in sisal, for the production of fiber, and new roads are being projected and will shortly be built in all parts of the interior. They will all be of the same general character as those now in existence, and will be easily and cheaply made."

OCEAN LINES.

Under date of October 2, 1893, Consul McLain wrote that goods reached the Bahamas from the United States by means of sailing vessels and steamers—almost entirely by means of the latter. Nine-tenths of these goods are shipped from New York and are subjected to no handling until they reach Nassau. The goods are, for the most part, landed from the vessels at the wharves, the remainder being discharged into lighters outside the bar and conveyed thence to the wharves. Warehouses are provided. Those goods destined for any of the outlying islands are conveyed thither in small schooners.

In a report dated December 29, 1893, Consul McLain adds:

"Shipping facilities from the United States are good. Three steamers leave New York for this port and return during each month. The time of passage is from three and a half to five days. Occasional sailing vessels are also going to and fro between this port and several American ports."

BERMUDA.¹

Consul Grout, August 19, 1893:

"The people of Bermuda are obliged, on account of the geographical position of the islands, if for no other reason, to depend upon the United States for almost all their supplies. The United States furnish at least two-thirds of the goods consumed. The remainder is brought from England.

"Goods reach Bermuda from the United States by sailing vessel or steamer direct and are subject to no extra handling from the time of departure until arrival.

"There are only two ports of entry—St. George and Hamilton. The latter is the principal one and by far the more preferable, on account of the superior dock facilities provided by the port corporation.

"At the present time there is but one regular line of steamers running between New York and Bermuda (those of the Quebec Steamship Company). The steamers of this line leave New York and arrive directly at the dock at Hamilton, where goods are landed under sheds of ample capacity, well protected from the weather. The time occupied in transit is usually about three days, and, owing to increasing business and harbor improvements now under contract, this company contemplates putting on faster steamers.

"Bermuda comprises various divisions or 'parishes,' including several islands connected by bridges with the main body. Goods destined for any of these divisions outside of Hamilton are reshipped on large sailing boats or transported by drays, in either case the form of outside covering being the same as when received at the dock."

 CUBA.

Consul-General Williams, Havana, September 20, 1893:

"Goods are brought here from the United States either in sailing vessels or steamships. After being loaded in the United States they are not subjected to any further handling until they reach this port.

"All goods are forwarded to the interior by railways or coasting vessels and are given good handling and usage en route. From the railway in the interior and from the wharves at the outports, they are transferred to the distributing centers, generally in carts drawn by oxen or mules. In this part of the island pack horses and porters are but little used for this purpose."

¹ According to the Statesman's Year Book for 1896, there are 32 miles of telegraph wire and 15 of cable in the Bermudas. A cable connecting the island with Halifax, Nova Scotia, was laid in July, 1890.

Consul Cheney, of Matanzas, October 29, 1893:

"Goods reach this district almost entirely by steamship from New York, Tampa, New Orleans, or Pensacola. They are not liable to any other handling or usage than that which is common to all regular steamship routes. On all these routes American goods are handled with ordinary care, and, when properly packed, are little liable to injury except in extraordinary weather.

"As in most Cuban ports, for want of sufficient depth of water at the wharves, steamers anchor in the bay, half a mile or more away, and discharge by means of lighters. This, of course, adds somewhat to the danger of damage by handling and weather, especially as the laborers employed in the transfer are not always the most intelligent and careful.

"As a rule, goods are shipped to the interior by rail. They are liable to go from this port and from distributing points in the interior short distances by pack mules. Generally speaking, there are no roads, other than the railroad and the mule paths, and wagons such as do the transportation in the towns in the United States away from railroads are unknown. It is scarcely necessary to have regard for either size or shape of packages liable to transportation by mules. They carry almost anything that can be carried by any means of transportation and with safety. It is only necessary to keep in mind that the limit of a mule's load is 400 pounds, which must be divided and carried half on each side. The limit of the weight of packages is therefore 200 pounds."

OCEAN LINES.

Havana is connected by regular lines of steamers with United States and Spanish ports. Lines of steamboats connect at Tampa and Pensacola, Fla., with the Florida railroads, and by means of them with the various railroad systems of the United States. The lines sailing from New York are:

New York and Cuba Mail Steamship Company, for Havana every Wednesday and Saturday; for Tampico every Wednesday. Steamers *Seguranca*, Havana and Mexican ports; *Saratoga*, Havana and Tampico; *Seneca*, Havana and Mexican ports. For Nassau, Santiago, and Cienfuegos, via Guantanamo, every alternate Thursday. Steamer *Santiago*. Jas. E. Ward & Co., agents, 113 Wall street, New York.

Munson Steamship Line from New York for Matanzas, Cardenas, and Sagua. Steamers *Ardanmhor*, *Ardanrose*, and *Ardandhu*. Also from Philadelphia for Havana, Tampico, and Vera Cruz. Steamer *Victoria*. W. D. Munson, 80 Wall street, New York.

Campania Trasatlántica Española (formerly A. Lopez & Co. North American Branch). The steamers of the Spanish Steamship Line, under contract with the Spanish Government, leave New York for Havana direct on the 10th, 20th, and 30th of every month. J. M. Ceballos & Co., agents, pier 10, East River.

Bea Bellido & Co. line of steamers for Matanzas, Cardenas, Sagua, and Caibarien. Waydell & Co., 21 Old Slip.

Regular Line for Guantanamo, Santiago, and Cienfuegos. Steamer *Ardangorm*. Waydell & Co., 21 Old Slip.

*Return of foreign shipping in the port of Havana during the year 1894.**

Nationality.	Steamers.	Barks.	Barkentines.	Schooners.	Total.	Tonnage.
American.....	392	31	18	115	556	631,958
Spanish.....	327	59	29	4	419	666,601
French.....	32	1			33	78,590
German.....	32	1			33	45,685
Dutch.....	2				2	189
Norwegian.....	35	9	1		45	25,345
Italian.....		6	3		9	4,470
Russian.....				1	1	314
Total.....	820	107	51	120	1,098	1,453,152

* Report of British consul-general at Havana, March 31, 1894.

RAILROADS, TELEGRAPHS, ETC.¹

Much progress has been made of late years in opening up the country and developing its agricultural resources with railroads.

There are now upward of 1,000 miles of main line belonging to the railway companies, and all the larger sugar estates have private lines connecting them with the main lines.

There are ten railway companies in Cuba, the most important being the Ferrocarriles Unidos.

The Ferrocarriles Unidos Company have four lines connecting Havana respectively with Matauzas, Batabano, Union, and Guanajay. The lines pass through the most populated part of the country and connect Havana with the other lines in this part of Cuba.

The Western Railway was commenced about forty years ago, and in 1891, the year when it was acquired by an English company, had reached Puerte de Golpe, a distance of 96 miles from Havana, and 10 miles from Pinar del Rio, the capital of the Province of that name and place of residence of the authorities, as well as being the center of the tobacco-growing district. The line was at this time in very bad order. The new company lost no time in beginning the extension, and great exertions have successfully been made to reach Pinar del Rio this spring. Great improvements have also been made in the old part of the line. Many of the bridges have been replaced by modern steel ones, and a great part of the rails has been entirely renewed. New and comfortable carriages have been put on the line and the daily trains run with punctuality. There is no doubt that the extension of the line will be of the greatest importance to the western provinces of Cuba, opening up the rich tobacco district of Vuelta Abajo, and bringing into touch some of the finest land in the island, which has as yet been retarded by want of easy communication with the ports. There is already talk of extending the line farther westward.

¹ Extracts from report of British consul-general at Havana, March 31, 1894.

The other railway companies are as follows: *Ferrocarriles Cardenas-Jacaro*, the main line of which joins the towns of Cardenas and Santa Clara; *Ferrocarril de Matanzas*, having lines between Matanzas and Murga, and also between Matanzas and Guareiras; *Ferrocarril de Sagua la Grande*, running between Concha and Cruces; *Ferrocarril Cienfuegos-Santa Clara*, connecting these towns; *Ferrocarriles Unidos de Caibarien*, from Caibarien to Placetas; *Ferrocarril de Puerto Principe-Nuevitas*; *Ferrocarril de Guantanamo*.

Ferrocarril de Marianao (the Marianao Railway) also belongs to an English company, with headquarters in London; the whole of the stock, including debentures, being in English hands. The original line was opened to the public in 1863, and belonged to a Cuban company, but having got into difficulties they liquidated and transferred their interests to the present proprietors. The line is only 8½ miles in length and runs between Havana and Marianao, with a branch line to a small village on the coast, which was opened to the public in 1883. During the last year, over 750,000 passengers were carried, passenger traffic being the principal source of revenue. The carriages are of the American type and are fitted, as well as the locomotives, with the Westinghouse automatic brake; the rails are of steel, weighing 60 pounds per yard.

The national carriage is the *volante*, and no other is used in the country in Cuba. It consists of a two-seated carriage in the form of an old English buggy, slung rather low down by leather straps from the axle of two very large wheels, and has shafts 15 feet long. The horse in the shaft is led by a postilion, whose horse is also harnessed to the carriage with traces. In the case of a long and rough journey, a third horse is harnessed on the other side of the shafts in the same manner. The carriage is extremely comfortable to travel in, and the great height of the wheels and their distance apart prevents all danger of turning over, although the roads in the country are, for the most part, mere tracks through fields and open land.

There are four ocean telegraph cables connected with Cuba. They are as follows:

The International Ocean Telegraph Company has a cable from Havana to Florida in connection with the United States Western Union Telegraph Company.

The Cuban Submarine Telegraph Company, Limited, has a cable connecting Havana with Santiago de Cuba and Cienfuegos.

The West India and Panama Telegraph Company has a cable connecting Havana with Santiago de Cuba, Jamaica, Puerto Rico, the Lesser Antilles, and the Isthmus of Panama.

The Compagnie Française de Câbles Sous-Marins has a cable connecting Havana with Santiago de Cuba, Haiti, Santo Domingo, Venezuela, and Brazil.

The only three towns in Cuba having cable connections are Havana, Cienfuegos, and Santiago de Cuba.

The telegraph system in Cuba is in the hands of the Government. There are wires connecting all the towns and villages in the islands.

The telephone system in Havana also belongs to the Government, but is farmed out for a limited number of years to a company called the Red Telefonica de la Habana. Nearly all the public and private buildings in the city and suburbs are connected by telephone.

HAITI.

Consul-General Durham, Port au Prince, August 29, 1893:

“Goods reach this island by steamers and sailing vessels. Goods from steamers are landed from lighters. Sailing vessels generally dock at the custom-house wharf. Ample warehouses are provided. They are well roofed, but the walls, being arranged for free ventilation, necessary in this climate, expose goods to driving rains.

“Transshipments to the interior are generally made by pack mules. This, however, does not affect the manner of packing of goods in the United States, for merchandise rarely goes to the interior in original packages.”

According to the Handbook of Haiti, issued in 1893 by the Bureau of the American Republics, Haiti has eleven ports open to foreign commerce, viz: Cape Haitien, Port de Paix, Gonaives, St. Marc, Port au Prince, Petit Goave, Miragoane, St. Jeremie, Aux Cayes, Aquí, and Jacmel. Besides a number of sailing vessels, there are lines of steamers running to New York, to European ports, to Mexico, Central American ports, Colombia, Venezuela, and various islands of the Antilles. Haiti is a member of the Universal Postal Union, and is connected by cable with the outside world. She has also an inland postal service, and lines of telegraph are being built to connect her cities and towns.

The roads in the interior are little more than mule paths, the highways built by the French having become impaired by neglect and the effects of the heavy rains. The common method of traveling in the interior is on the backs of horses, donkeys, and mules.

There are no railroads in Haiti, but four lines have been projected, viz: (1) From Port de Paix to Gros Morne; (2) from the Grand Saline through the plain of Artibonite; (3) from Cape Haitien to Onanaminthe; (4) from Port au Prince to the lakes through the Plaine du Cul de Sac.

SANTO DOMINGO.

The Handbook of Santo Domingo, published by the Bureau of the American Republics, in March, 1894, states that there is but one line of railroad in operation in Santo Domingo—from La Vega to Sanchez, on the Bay of Samana, 62 miles in length, 3½ feet gauge. Another line,

in course of construction, will connect the city of Santo Domingo with Azua, passing through San Cristobal and Bani, a distance of 90 miles. Lines have been projected (1) from Barahma, via Neyba and San Juan, to the Bay of Manzanillo, 186 miles; (2) Dominican Eastern Railway, from La Romana, a seaport 65 miles east of Santo Domingo, to San Lorenzo, on the Bay of Samana, via Leybo, length 200 miles, gauge $3\frac{1}{2}$ feet; (3) Central Santo Domingo Railway, from Puerto Plata, on the north coast, to Santiago, 49 miles, with an extension to the city of Santo Domingo, making the total length 155 miles.

At the end of 1890 there were 294 miles of telegraph, with communication with the cable systems of the world.

Steamers engaged in the West India trade call at Puerto Plata and other points.

PUERTO RICO.

Consul Stewart, San Juan, December 30, 1890:

"In the entire island there are about 150 miles of excellent road, and of this alone it is necessary to speak, since this is all that receives any attention. In its construction a level foundation is sought, and upon this is put a heavy layer of crushed rock and brick, which, after having been well packed and rounded, is covered with a layer of earth. This is then well packed also, and upon the whole is spread a layer of ground limestone, which is pressed and rolled until it forms almost a glossy surface. This makes an excellent road here, where the climate is such that it does not affect it, and where there is no heavy traffic; but these conditions being changed, the road, it is thought, would not stand so well; hence, further particulars are deemed useless."

According to the Statesman's Year Book for 1895, there are 12 miles of railway and 470 miles of telegraph in Puerto Rico.

JAMAICA.

The island of Jamaica in 1893¹ had 119 $\frac{1}{2}$ miles of railway open, and 700 miles of telegraph lines.

Consul Estes, Kingston, December 9, 1890:

"The Macadam system of road building is used altogether on the streets and 'Government roads,' as the main highways are called, and on the best of the byroads in the plains, but the mountain 'parochial roads,' usually little better than mere trails or bridle paths, are left to the tender mercies of heavy rains and unskilled labor to a great extent and are far from worthy of any extended notice in this report.

"The same system, however, that leads to cut up and dusty streets during the dry season and to flowing rivulets of mud and water in the

¹Statesman's Year Book, 1895.

wet season, under the heavy hauling in some parts of Kingston, yields most excellent driving roads in the outskirts of the city and main highways, far above the average in the Western Hemisphere, in the country.

“The stage routes throughout Jamaica, though used by the peasantry to an unusual degree, are in many places quite equal to many of the trotting tracks of the United States in smoothness of surface and elasticity.”

Consul Eckford, Kingston, January 15, 1894:

“The shipping facilities from the United States to this island are excellent. One steamship company runs regularly bimonthly and sometimes weekly steamers from New York to this port, while there are numerous ‘tramp’ steamers. From the outports on the north side of the island there is semiweekly communication either with Boston, Baltimore, Philadelphia, or some other port. Sailing vessels are also constantly plying from this city and the outports of the island to the principal ports of the United States.”

SOUTH AMERICA.

INTERCONTINENTAL RAILWAY.

The project of an intercontinental railway to connect the countries of North and South America took definite shape in the appointment in 1890 of an international commission representing the United States, Mexico, Guatemala, Salvador, Colombia, Brazil, Venezuela, Ecuador, Peru, the Argentine Republic, Uruguay, and Paraguay. The executive committee made a preliminary report January 31, 1893, giving the results of surveys made by the commission's engineers. These surveys, according to the following information, which was given to the public June 20, 1895, have already been utilized in determining the location of certain links in the proposed system:

"The Guatemala Central Railroad Company, whose main line runs from San Jose, on the Pacific, to Guatemala City, has determined to build that portion of the intercontinental system intended to traverse Guatemala, and has put that determination into practicable shape by actual construction, having opened to traffic on April 14 last the section extending from Santa Maria, on the Guatemala Central, to Santa Lucia, and is continuing the construction to Patulul with the intention of continuing the line northwestwardly to the Mexican frontier and southeastwardly to the frontier of Salvador. The roadbed and bridges of this line are being constructed on the standard gauge, although the track to be adopted at first is 3 feet. This road is being substantially built, the bridges being of steel with stone abutments, and the track already laid being steel rails of 54 pounds. The Mexican Southern Railroad is already in operation to Oaxaca, 400 miles south of the City of Mexico, and will soon close the intervening gap between that city and the Guatemala frontier. The Mexican Southern and the Guatemala Central will soon enable one to go by rail from Washington to the frontier of Salvador. In this latter Republic Mr. Scherzer is at work constructing his line, and it, taken in connection with the railroads already existing in Nicaragua, would enable travelers to go by rail from any city in the United States to the proposed location of the Nicaragua Canal."

Concessions have been granted for a line from the southern shore of Lake Nicaragua through Costa Rica, and this road, it is thought, will

be built. The line through Central America surveyed for the commission, however, runs generally along the Pacific slope from the north-western portion of Guatemala to the city of Panama. In Colombia the route has two arms, one from Panama and the other from Cartagena, on the Caribbean Sea, to a point south of Medellin. At Medellin a line branches off to Venezuela. The Panama and Cartagena lines unite below Medellin and form a single route through Ecuador, touching the capital, Quito, and through Peru to Cuzco. The line continues along the western and southern shores of Lake Titicaca to La Paz, the capital of Bolivia. Between La Paz and Huanchaca a railroad is already in operation for more than half the distance (Oruro to Huanchaca). From Huanchaca three routes diverge, one a continuation of the great north and south trunk line to Jujuy, in the Argentine Republic, already connected by railroad with Buenos Ayres; another eastwardly, through Bolivia and Brazil, to Rio de Janeiro; and the third branching off from the Brazilian route at Pomobamba and running in a general southeast course through Paraguay to Asuncion. The Oruro Railroad already connects Huanchaca with the port of Antofagasta, Chile.

COLOMBIA.

OCEAN LINES.

The port of Panama, situated on the west side of the bay of that name, and located at one of the most interesting geographical positions in the Americas, if not of the world, is of the greatest importance. It is, so to speak, a halfway station on the highway of commerce between Europe and Asia; yet it has no direct line to the Asiatic ports. By the way of Colon and the Panama Railroad it is connected with Europe and with the eastern part of the United States by many steamship lines, to wit: The Royal Mail Steamship Company (mail line, British); The Royal Mail Steamship Company (cargo line, British); Compagnie Générale Transatlantique, of Saint-Nazaire (French); Compagnie Générale Transatlantique, of Havre and Bordeaux (French); Compagnie Générale Transatlantique, of Marseilles (French); West Indies and Pacific Steamship Company, of Liverpool (British); The Harrison Line, of Liverpool (British); Hamburg-American Packet Company, of Havre and Hamburg (German); The Colombian Line, of New York (old Pacific Mail Steamship Company, United States); Compañía Transatlántica, of Barcelona (Spanish); The Italian Line, of Genoa (Italian). The fleets of these companies aggregate some sixty-five vessels, some of which are among the finest sailing across the ocean.

If the capitalists of the Republic of Colombia were to establish a direct line of steamers from Panama to Asia, by the way of Samoa or the Sandwich Islands, it would undoubtedly be the most important

highway of commerce in the world, and I dare say a favorable concession could be secured from this Government by any company that would see fit to inaugurate such a line.

From Panama south there are two ocean lines, viz., the South American Steamship Company and the Pacific Steam Navigation Company: northward, there are the Pacific Mail Steamship Company and the North American Navigation Company.

South American Steamship Company.—This company has steamers leaving this port every other week bound for Chile, the termini being Panama and Valparaiso, a distance of something over 3,000 miles. The itinerary of the line is as follows: Buenaventura, Tumaco, Esmeraldas, Bahia, Manta, Cayo, Ballenita, Guayaquil, Tumbes, Payta, Techura, Pimentel, Eten, Pacasmayo, Selaverry, Chimbote, Samanco, Casma, Huarmey, Supe, Huacho, Callao, Corro Azul, Tambo de Mora, Pisco, Lomas, Chala, Quilca, Mollendo, Ilo, Arica, Iquique, Tocopacilla, Tobija, Antofagasta, Taltal, Chanaral, Caldera, Carrizal Bajo, Huasco, Coquimbo, Valparaiso. The steamers of this line call at all of these places. The regular ports of call for the largest steamers are Guayaquil, Techura, Pimentel, Callao, Mollendo, Iquique, and Coquimbo. The distance from Panama to Guayaquil is 800 miles; from Guayaquil to Callao, 600 miles; from Callao to Iquique, 650 miles; and from Iquique to Valparaiso, 800 miles. This company secures its coal from Corral, some 400 miles south of Valparaiso, where splendid coal deposits are found.

The fleet of this line is composed of the following vessels:

Steamers.	Tonnage capacity.	Horse-power.	Steamers.	Tonnage capacity.	Horse-power.
Aconcagua	3,000	3,100	Limari	900	650
Imperial	3,000	3,000	Chillan	600	450
Mapocho	3,000	3,000	Blobio	600	400
Maipo	2,950	2,000	Spartan	600	400
Cachapoal	2,755	1,900	Aquila	600	400
Lantarc	2,600	1,600	Lirca	600	400
Amazones	2,500	1,800	Longavi	400	370
Itata	2,600	1,500	Maule	250	240
Coplapo	1,800	1,900	Pudeto	300	230

Only the largest of these vessels come to this port, viz., the *Aconcagua*, *Imperial*, *Mapocho*, *Maipo*, and *Cachapoal*. The other steamers, especially the small ones, do coastwise service and ascend the rivers as far as possible; so that, from Valparaiso to Panama, there is not a port of importance in Chile, Peru, and Ecuador that can not be reached by one of these vessels.

The passenger (first class) rates are: From Panama to Guayaquil, £13 15s. (\$66.81); from Guayaquil to Callao, £20 (\$97.32); from Callao to Valparaiso, £11 17s. 6d. (\$57.79); from Panama to Valparaiso, £31 17s. 6d. (\$154.63).

The rates to all intermediate points are somewhat proportional to distances. The passenger traffic is considerable both ways.

The rates of freight per ton are: Panama to Guayaquil and Techura, inclusive, 21.25 sols¹ (\$19.38); Panama to Pimentel and Huacho, inclusive, 25 sols (\$22.80); Panama to Callao and Valparaiso, inclusive, 27 sols (\$24.62).

The quantity of freight carried during the year 1893, from Panama to all ports south, was 14,400 tons; the quantity brought from all ports south to Panama was 8,660 tons; from Panama to Guayaquil, 10,000 tons; from Peruvian ports to Panama, 1,000 tons; from Panama to Peruvian ports, 2,500 tons.

The treasure brought from the south by this line for Central America, New York, and Europe, during the year 1893, amounted to \$2,200,000. The different staples which go to make up cargoes from the south are cacao, coffee, hides, rubber, cacao leaves, hay, vegetables, etc.; the cargoes south are general merchandise and manufactured products from the United States and Europe—principally from Europe.

The line is controlled by Chilean capitalists. The general agent in Panama, to whom all communications for inquiry can be sent, is Henry Ehrman.

The Pacific Steam Navigation Company.—This is an English corporation (limited), with headquarters in Liverpool. It runs steamers all over the world but has a distinct line doing service with Valparaiso, from which port it runs a special line of steamers to Panama. The fleet is composed as follows:

Steamers.	Tonnage capacity.	Horse-power.	Steamers.	Tonnage capacity.	Horse-power.
Arequipa.....	3,190	2,600	Pizarro.....	2,160	1,900
Bolivia.....	1,925	1,800	Quito.....	1,266	1,100
Coquimbo.....	1,821	1,600	Santiago.....	3,190	2,800
Caama.....	592	450	Serena.....	2,394	2,100
Manavi.....	1,041	900	Morro.....	170	150
Puno.....	2,398	2,200			

These steamers make trips fortnightly regularly, and work somewhat in conjunction with the South American Steamship Company, although they are distinct lines under different managements. There was a time, not so very long ago, when they ran a powerful competition, but they have pooled their issues.

The termini of this particular line are Valparaiso and Panama, but it runs a steamer regularly to Puntas Arenas and back, principally for the cattle business. The itinerary of this company is identical with that of the South American Steamship Company. The rates for passengers (first class) from Valparaiso to this place and intermediate points, and vice versa, are identical with those of the same company, as are their rates of freight.

The tonnage carried by this line during the year 1893, from Valparaiso to Panama and back, amounted to about 50,000 tons. The

¹ The consul-general values the sol at 91.2 cents.

staples composing the cargoes are the same as those carried by the South American Steamship Company, with the exception that it carries more European goods.

The treasure carried by this line during 1893 amounted to some \$3,000,000, consigned to parties in Central America and New York.

This company owns in the bay of Panama an island called the Little Taboga, leased from the owner for a number of years. On this island they have waterworks which furnish them all the needed water (spring) for their steamers. They maintain in this bay a small steamer called the *Morro*, of 170 tons, to supply their vessels with water. This lease is exceedingly valuable, as the water is excellent, and so far as known the only spring water in this part of the world.

North American Navigation Company.—This company has a fleet composed of the following vessels:

Steamers.	Tonnage capacity.	Horse-power.
St. Paul.....	606.61	460
Mexico.....	1,240.72	700
Keweenaw.....	2,511.40	2,000
Saturn.....	2,268.15	1,900
Progreso.....	1,919.15	1,700

This company was organized early in 1893, in San Francisco, by some of the leading merchants of that place, in opposition to the Pacific Mail Steamship Company. It operates in conjunction with the Panama Railroad, through bills of lading being given from San Francisco direct to New York, via Panama and Colon, and vice versa. All the vessels are chartered from eastern parties for the term of one year, and the line is controlled by Capt. W. L. Merry, president of the company, with general offices in San Francisco.

It has no accommodations for passengers (first class), and does not pretend to carry any, unless upon exceptional occasions, and then only as deck passengers. It carries, however, a large amount of freight, both from San Francisco to Panama, and vice versa. It broke the monopoly which the Pacific Mail Steamship Company had enjoyed on this coast for many years. The gross tonnage of this line, both ways, amounts to some 60,000 tons. The trips are somewhat irregular, there being no fixed dates for arrivals or departures; but so far, they have averaged two trips per month each way. The rates of freight, owing to the competition with the Pacific Mail Steamship Company, are very low and irregular; they charge what they can get, sometimes less than a cent per pound, often only \$2 per ton.

The ships of the North American Navigation Company make the trips direct from here to San Francisco and return, calling on rare occasions at Mexican and Central American ports. The distance from San Francisco to Panama is 3,940 miles.

The Pacific Mail Steamship Company.—This company has been supplying service between San Francisco, the Isthmus, and New York, for nearly half a century. It is not as powerful in these regions as it once was, but promises, ere long, if all signs do not fail, to more than regain its former usefulness and greatness. It is doubtful, however, if it will ever have a foothold south of Panama, nor does it seem to care for any; in fact, it has not protected its own coastwise trade north of Panama, as it has allowed the Pacific Steam Navigation Company (British) to encroach on its domain, that line now having a steamer doing service at the expense of the Pacific Mail as far north as Puntas Arenas, in Costa Rica. This service promises not to stop there, and it would not be surprising to see the Pacific Steam Navigation Company steam all the way to San Francisco, unless the Pacific Mail gives much better service than it now gives.

The fleet of the Pacific Mail Steamship Company on this route consists of the following vessels:

Steamers.	Tonnage capacity.	Horse-power.	Steamers.	Tonnage capacity.	Horse power.
Colon.....	1,843.50	1,700	City of Sydney.....	1,965.88	1,800
San Jose.....	1,538.25	1,450.50	Costa Rica.....	1,166.80	900
Acapulco.....	1,759.24	1,600	Starbuck.....	1,548.41	1,000
San Blas.....	1,496.50	1,300	City of Panama.....	1,046.30	800
San Juan.....	1,496.50	1,350	Barracouta (British).....	1,659	1,400
Colima.....	2,143.23	2,000			

The four last ones are doing coasting service as far up as Acapulco; they do not go to San Francisco. The itinerary of the company is as follows: Puntas Arenas, San Jose del Sur, Corinto, Amapala, La Union, La Libertad, Acajutla, San Jose de Guatemala, Champerico, Ocos, San Benito, Tonalá, Salina Cruz, Puerto Angel, Acapulco, Manzanillo, San Blas, Mazatlan, and San Francisco.

The main points and their distances from Panama are: Corinto, 740 miles; San Jose de Guatemala, 990; Acapulco, 1,590; Manzanillo, 2,140; San Blas, 2,225. The distance between Panama and San Francisco is 3,920 miles.

When the coffee ceases to move, one of the coasters is withdrawn from the route, and it then serves as a coal ship in the bay of Panama.

The *Barracouta* sails under the English flag.

Three steamers leave San Francisco for Panama, on the 8th, 18th, and 28th of each month; they return from Panama to San Francisco on the 9th, 19th, and 29th of each month. The coasters leave Panama on the 10th and 29th of each month, and they aim to make about one trip per month, for each vessel, but this is not very regular, owing to the difficulties in loading and unloading at the different places in Central America and Mexico, the system of lighterage being in vogue at almost all these ports, there being no piers.

The rates, in American dollars, for passengers (first class) from Panama are: To San Francisco, \$100; to Puntas Arenas, \$20; Puntas Arenas

to San Juan, \$10; San Juan to Corinto, \$5; Corinto to Amapala, \$5; Amapala to La Union, \$5; La Union to La Libertad, \$5; La Libertad to Acapulco, \$5; Acapulco to San Jose, \$5; San Jose to Champerico, \$5; Champerico to Ocos, \$5; Ocos to San Benito, \$5; San Benito to Tonalá, \$5; Tonalá to Salina Cruz, \$5; Salina Cruz to Puerto Angel, \$5; Puerto Angel to Acapulco, \$10; Acapulco to Manzanillo, \$10; Manzanillo to San Blas, \$5; San Blas to Mazatlan, \$5; Mazatlan to San Francisco, \$45.

The rates of freight for treasure from Panama to all ports in Central America and Mexico is three-fourths of 1 per cent; from Panama, on sums of \$10,000 or more to one consignee, five-eighths of 1 per cent; between the ports of Central America, three-eighths of 1 per cent; between the ports of Central America and Mexico, one-half of 1 per cent; between Acapulco and the Mexican ports to the north, three-eighths of 1 per cent; between Acapulco and the Mexican ports south, three-eighths of 1 per cent; and between the Mexican ports south of Acapulco and those north, one-half of 1 per cent.

The rates of freight on cotton from Acapulco to Manzanillo, San Blas, and Mazatlan, are three-fourths of 1 cent per pound. All these sums are payable in United States coin, and in advance.

The rates on all freights per ton, or per 40 cubic feet, are, for long haul and short haul, as per following table:

From—	To—																	
	Puntas Arenas.	San Juan.	Corinto.	Amapala.	La Union.	La Libertad.	Acapulco.	San Jose.	Champerico.	Ocos.	San Benito.	Tonalá.	Salina Cruz.	Puerto Angel.	Acapulco.	Manzanillo.	San Blas.	Mazatlan.
Panama	\$7	\$9	\$9	\$9	\$9	\$10	\$10	\$10	\$10	\$11	\$12	\$14	\$14	\$14	\$14	\$16	\$16	\$16
Puntas Arenas		5	5	6	6	6	6	6	7	8	10	10	10	10	10	12	12	12
San Juan del Sur			4	4	4	5	5	5	7	8	10	10	10	10	10	12	12	12
Corinto				3	3	4	4	4	5	7	8	10	10	10	10	12	12	12
Amapala					3	4	4	4	5	7	8	9	9	9	9	10	10	10
La Union						4	4	4	5	7	8	9	9	9	9	10	10	10
La Libertad							4	4	4	6	8	8	8	8	8	9	9	10
Acapulco								4	6	6	8	8	8	8	8	9	9	10
San Jose de Guatemala										3	5	6	6	6	6	8	8	10
Champerico											3	3	3	3	3	5	5	10
Ocos												5	5	5	5	5	7	10
San Benito												5	5	5	5	7	7	10
Tonalá													5	5	5	7	7	10
Salina Cruz														5	5	7	7	10
Puerto Angel															5	7	7	10
Acapulco																6	6	8
Manzanillo																	6	7
San Blas																		6

From Panama to San Francisco, \$18.

In addition to the preceding table, which shows the rates of freight for long and short hauls from Panama to San Francisco, I submit the Pacific Mail Steamship Company's tariff for freight from San Francisco to Panama, which gives the long and short haul rates on some eighty-seven different staples and articles, to all points south from San Fran-

cisco, in Mexico, in Central America, and Panama. From this table, it will be seen that the rates southward are considerably higher on the short hauls. This table also shows what the cargoes from San Francisco southward are composed of.

Freight rates, San Francisco to ports named.

[2,000 pounds = 1 ton weight; 40 cubic feet = 1 ton measurement.]

Articles.	Central America.		Mexico.			United States of Colombia.		South America.		
	Amapala, Corinto, San Juan del Sur, Funchas Arenas.	Ocos, Champerico, San Jose de Guatemala, Acajutla, La Libertad, La Union.	Port Angel, Salina Cruz, Tonala, San Benito.	San Blas, Manzanillo, Acapulco.	Mazatlan.	Panama.	Buenaventura, Tumaco.	Ecuador: Esmeraldas, Bahai, Mania, Guayaquil.	Peru: Payta, Pimentel, Eten, Pacasmayo, Salaverry, Callao, Pisco, Chmeta, Molendo, Ilo.	Chile: Iquique, Tocopillo, Antofagasta, Talca, Caldera, Carrizal Bajo, Coquimbo, Valparaiso.
Agricultural implements, meas.	\$18.00	\$18.00	\$18.00	\$12.00	\$8.00	\$18.00	\$24.00	\$24.00	\$28.00	\$28.00
Ales and porters..... meas.	12.00	12.00	12.00	10.00	8.00	12.00	20.00	20.00	24.00	24.00
Beer (bottled, casks, or cases)..... meas.	10.00	10.00	10.00	8.00	8.00	10.00	20.00	20.00	24.00	24.00
Boilers, weight or meas., ship's option:										
Under 2,000 pounds.....	18.00	18.00	18.00	11.00	8.00	18.00	28.00	28.00	32.00	32.00
2,000 to 6,000 pounds.....	25.00	25.00	25.00	17.00	12.00	25.00	32.00	32.00	40.00	40.00
6,000 to 12,000 pounds.....	32.00	32.00	32.00	24.00	16.00	32.00	40.00	40.00	48.00	48.00
Bees in hive..... each.	6.00	6.00	6.00	6.00	4.00	6.00	12.00	12.00	15.00	15.00
Bags (coffee and sugar, bales)..... meas.	12.00	12.00	12.00	10.00	8.00	12.00	20.00	20.00	24.00	24.00
Brooms (cases)..... do.	15.00	15.00	15.00	10.00	8.00	15.00	24.00	24.00	28.00	28.00
Broom corn (compressed), meas.	15.00	15.00	15.00	10.00	8.00	15.00	24.00	24.00	28.00	28.00
Bran..... weight.	27.00	27.00	27.00	18.00	12.00	27.00	40.00	40.00	50.00	50.00
Barley (large lots same as wheat)..... weight.	18.00	18.00	14.00	12.00	8.00	18.00	24.00	24.00	28.00	28.00
Beans and peas (dried, in sacks)..... weight.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Cinnamon..... do.	35.00	35.00	35.00	25.00	15.00	35.00	48.00	48.00	60.00	60.00
Corn..... do.	12.00	12.00	12.00	10.00	8.00	12.00	20.00	20.00	24.00	24.00
Cattle..... each.	70.00	70.00	70.00	55.00	45.00	70.00	Valuable by special contract.			
Cement (barrels)..... weight.	12.00	12.00	12.00	12.00	8.00	12.00	20.00	20.00	24.00	24.00
Crockery (common)..... meas.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Canned goods..... do.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Coal..... weight.	12.00	12.00	12.00	10.00	8.00	12.00	20.00	20.00	24.00	24.00
Castings (see Stoves)..... do.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Doors..... meas.	15.00	15.00	15.00	10.00	8.00	15.00	24.00	24.00	28.00	28.00
Dry goods..... do.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Flour..... weight.	14.00	10.00	13.00	12.00	8.00	14.00	20.00	20.00	24.00	24.00
Fruit (green, owner's risk), meas.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Fruit and vegetables (canned)..... meas.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Furniture (common)..... do.	16.00	16.00	16.00	12.00	8.00	16.00	28.00	28.00	32.00	32.00
Fungus..... weight.	32.00	32.00	32.00	30.00	16.00	32.00	48.00	48.00	60.00	60.00
Firecrackers (on deck, owner's risk)..... meas.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Fire brick..... weight.	11.00	11.00	11.00	10.00	8.00	11.00	20.00	20.00	24.00	24.00
Garlic..... meas.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Groceries (not otherwise specified)..... meas.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Horses..... each.	110.00	110.00	90.00	85.00	65.00	110.00	Valuable by special contract.			
Herring..... meas.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Hops..... do.	15.00	15.00	15.00	10.00	8.00	15.00	20.00	20.00	24.00	24.00
Hardware..... do.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Honey (in tins or barrels), meas.	18.00	18.00	18.00	12.00	8.00	18.00	32.00	32.00	40.00	40.00

Freight rates, San Francisco to ports named—Continued.

[2,000 pounds = 1 ton weight; 40 cubic feet = 1 ton measurement.]

Articles.	Central America.		Mexico.			United States of Colombia.		South America.		
	Amapala, Corinto, San Juan del Sur, Funtas Arenas.	Ocosingo, Camperico, San Jose de Guatemala, Acajutla, La Libertad, La Union.	Port Angel, Salinas Cruz, Tonala, San Benito.	San Blas, Manzanillo, Acapulco.	Mazatlan.	Panama.	Buenaventura, Tumaco.	Ecuador: Esmeraldas, Bahai, Manta, Guayaquil.	Peru: Paita, Pimentel, Eten, Pacasmayo, Salsaverry, Callao, Pisco, Chala, Mollendo, Ilo.	Chile: Iquique, Tocopillo, Antofagasta, Talca, Chidren, Carrisal Hafo, Coquimbo, Valparaiso.
Hay (compressed, 18 pounds per cubic foot) . . . weight.	25.00	25.00	25.00	20.00	15.00	25.00	40.00	40.00	50.00	50.00
Iron (bar, band, hoop, sheet, corrugated) . . . weight.	13.00	13.00	13.00	11.00	8.00	13.00	28.00	28.00	32.00	32.00
Jewelry (1 per cent on value in addition) . . . meas.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Leather . . . do.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Laths . . . per M.	4.00	4.00	4.00	2.50	2.00	4.00	7.00	7.00	10.00	10.00
Liquors (not otherwise specified) . . . meas.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Lumber . . . per M.	24.00	24.00	20.00	16.00	16.00	20.00	32.00	32.00	40.00	40.00
Lard . . . weight.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Merchandise (general, weight or meas., ship's option)	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Malt . . . weight.	15.00	15.00	15.00	12.00	10.00	15.00	25.00	25.00	30.00	30.00
Matches (in tins, on deck, owner's risk) . . . meas.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Match wood . . . do.	12.00	12.00	12.00	12.00	8.00	12.00	20.00	20.00	24.00	24.00
Machinery, weight or meas., ship's option	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Machinery (large), weight or meas., ship's option, same as boilers										
Musical instruments (released) . . . meas.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Moldings . . . meas.	15.00	15.00	15.00	10.00	8.00	15.00	24.00	24.00	28.00	28.00
Nails . . . weight.	13.00	13.00	13.00	11.00	8.00	13.00	28.00	28.00	32.00	32.00
Nuts . . . meas.	15.00	15.00	15.00	10.00	8.00	15.00	24.00	24.00	28.00	28.00
Oats . . . weight.	22.00	22.00	22.00	18.00	12.00	22.00	40.00	40.00	50.00	50.00
Oil, food (when taken), meas.	22.00	22.00	22.00	12.00	10.00	22.00	35.00	35.00	45.00	45.00
Oils (in tins or barrels) . do.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Onions (bags or boxes) . do.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Opium . . . value per cent.	1	1	1	1	1	1	2	2	2	2
Paints (in tins) . . . meas.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Plated ware (1 per cent on value in addition) . meas.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Potatoes (bags or boxes), weight	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Quicksilver . . . weight.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	30.00	30.00
Rice (in mats) . . . do.	15.00	15.00	15.00	12.00	8.00	15.00	24.00	24.00	28.00	28.00
Sheep (for mutton) . each.	5.00	5.00	5.00	3.00	2.50	5.00	Valuable by special contract.			
Safes (weight):										
Under 2,000 pounds . . .	18.00	18.00	18.00	11.00	8.00	18.00	28.00	28.00	32.00	32.00
2,000 to 6,000 pounds . .	25.00	25.00	25.00	17.00	12.00	25.00	32.00	32.00	40.00	40.00
6,000 to 12,000 pounds . .	32.00	32.00	32.00	24.00	16.00	32.00	40.00	40.00	48.00	48.00
Sago . . . weight.	25.00	25.00	25.00	18.00	12.00	25.00	40.00	40.00	50.00	50.00
Salt . . . do.	12.00	12.00	12.00	10.00	8.00	12.00	20.00	20.00	24.00	24.00
Salmon (barrel or case), meas.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00
Sash and blinds (owner's risk) . . . meas.	15.00	15.00	15.00	10.00	8.00	15.00	24.00	24.00	28.00	28.00
Shingles . . . per M.	3.00	3.00	3.00	2.50	2.00	3.00	6.50	6.50	9.00	9.00
Silk . . . meas.	27.00	27.00	27.00	18.00	12.00	27.00	40.00	40.00	48.00	48.00
Shooks . . . do.	12.00	12.00	12.00	10.00	8.00	12.00	20.00	20.00	24.00	24.00
Shrimps (in bags) . weight.	18.00	18.00	18.00	12.00	8.00	18.00	24.00	24.00	28.00	28.00
Spices (see Cinnamon), meas.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Stoves . . . do.	16.00	16.00	16.00	12.00	8.00	16.00	24.00	24.00	28.00	28.00
Tobacco . . . do.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Tea . . . do.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Tallow . . . weight.	15.00	15.00	15.00	12.00	8.00	15.00	24.00	24.00	28.00	28.00

Freight rates, San Francisco to ports named—Continued.

[2,000 pounds = 1 ton weight; 40 cubic feet = 1 ton measurement.]

Articles.	Central America.		Mexico.			United States of Colombia.		South America.		
	Amapala, Corinto, San Juan del Sur, Funitas Arenas.	Ocos, Camperico, San Jose de Guatemala, Acajutla, La Libertad, La Union.	Fort Angel, Salina Cruz, Tonala, San Benito.	San Blas, Manzanillo, Acapulco.	Mazatlan.	Panama.	Buenaventura, Tumaco.	Ecuador: Esmeraldas, Bahai, Mania, Guayaquil.	Peru: Pavia, Pimental, Pisco, Pisco, Salsaverry, Callao, Pisco, Chala, Mollendo, Ilo.	Chile: Iquique, Tocopillo, Antofagasta, Talca, Caldera, Carrizal Bajo, Coquimbo, Valparaiso.
Treasure (sealed packages), value per cent	1	1	1	1	1	1	2	2	2	2
Vegetables (n. o. s., owner's risk).....meas.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Wire, barbed.....do.	12.00	12.00	12.00	10.00	8.00	12.00	20.00	20.00	24.00	24.00
Woodenware.....do.	18.00	18.00	18.00	12.00	8.00	18.00	25.00	28.00	32.00	32.00
Willowware.....do.	18.00	18.00	18.00	12.00	8.00	18.00	28.00	28.00	32.00	32.00
Wagons (kneeked down; set up, special rate), meas.	18.00	18.00	18.00	12.00	8.00	18.00	24.00	24.00	28.00	28.00
Wheat.....weight.	12.00	12.00	12.00	10.00	8.00	12.00	20.00	20.00	24.00	24.00
Wines and bitters (California).....meas.	10.00	10.00	10.00	8.00	8.00	10.00	20.00	20.00	24.00	24.00
Wines (foreign).....do.	15.00	15.00	15.00	12.00	8.00	15.00	28.00	28.00	32.00	32.00

NOTE.—The rate above given for flour to ports in Guatemala and Salvador is fixed at a reduction of 25 per cent, as provided in the mail contracts with those States.
 No bill of lading signed for less than \$3 to Mazatlan, San Blas, Manzanillo, and Acapulco, \$4 to ports south of Acapulco to Panama, and \$8.50 to Buenaventura, Tumaco, and South American ports. This tariff does not apply to articles of unusual bulk or weight, which are taken only by special agreement. The freight on live stock must be prepaid and taken by written contract only. The freight must be prepaid on all perishable articles; and must be prepaid on all freight to all ports, except Mazatlan, Panama, Callao, and Valparaiso, and to the two latter when less than \$20. The company reserves the right to alter this tariff at any time. Where "weight" and "measurement" are mentioned they mean 2,000 pounds or 40 cubic feet. All freight not named herein, or clearly analogous to articles named, will be charged general merchandise rate.

The tonnage carried by the Pacific Mail Steamship Company during the year 1893 from San Francisco to Panama, amounted to 46,563 tons, the destination of which was as follows: New York, 9,686; Europe, 31,441; South Pacific ports, 2,485; Panama and vicinity, 2,953.

The tonnage from Panama to San Francisco by the Pacific Mail Steamship Company was as follows: Panama and South Pacific ports, 1,473; from New York, via Panama, 12,984; from Europe, via Panama, 35,100, or a total of 49,557 tons, and a gross total, both ways, of 96,120 tons, without counting coffee, to which I will allude immediately. All of this in spite of the strong competition of the North American Navigation Company.

From Central American ports, the steamers of the Pacific Mail Steamship Company brought to Panama 564,049 sacks of coffee, averaging 152 pounds each, gross. This coffee was destined as follows: For New York, 73,986 sacks; for Europe, 489,659 sacks; for the Isthmus and South Pacific ports, 404 sacks. I am unable to find out how many sacks of coffee were taken to San Francisco by the steamers of this line

on their homeward trip; these figures can be obtained from the custom-house at that place, but I am informed by persons in a position to know that it should be at least 250,000 sacks. This coffee trade from Central America is growing larger and larger every year, and it is safe to say that not less than 500,000 sacks were taken by French, German, Italian, and English tramp steamers to their respective countries, but especially to Hamburg, Germany.

The treasure carried by this line from Panama to San Francisco in 1893 was as follows: From Panama and South Pacific ports, \$944,476; from New York, via Panama, \$79,930; from Europe, via Panama, \$98,279; total, \$1,122,685.

The passengers to Panama from San Francisco, Mexico, and Central America during 1893 numbered 475 cabin and 757 steerage. From Panama to San Francisco, Central America, and Mexican ports the line carried 1,526 cabin and 795 steerage passengers, a grand total of 3,553 passengers, out of which there were only 43 "deadheads."

PANAMA RAILROAD.¹

This very important connecting link between the Pacific and the Atlantic oceans has become a part of the assets of the Panama Canal Company, but it is operated under American charter (New York), a board of directors being kept in New York City for that purpose.

¹The New Orleans Picayune of June 20, 1895, says:

"The enterprise inaugurated by the Wholesale Grocers' Association of this city, in putting in operation a ship between this city and the Isthmus of Panama, connecting there with the Panama Railroad and with a line of vessels from California points, now promises to develop into a permanent steamship line to the Isthmus. The first vessel of the new line is to sail shortly, and it is now understood that she will be followed by other vessels at regular intervals. A moderate-sized steamship is to be used at first; but it is expected that, as the business develops, a larger vessel will be placed in commission.

On the 9th of July, however, the Picayune announced that the enterprise would be abandoned. "The experimental trip of the steamship *Oteri*," said the Picayune, "has demonstrated fully that it is entirely practicable to compete with the railroads in the Pacific coast trade by water via the Isthmus of Panama, and in that sense the experiment has been a success. It has also apparently convinced the railroads that New Orleans is entitled to consideration on a parity with New York, as the rate from the Pacific coast has been fixed at the same figure as that asked to New York, which is the concession originally demanded by the merchants. The business men have, therefore, carried their point, and for that reason are willing to abandon the steamship line." But four days later—July 11—the Picayune stated that the experiment had served to turn the attention of the Panama Railroad Company to the excellent field offered by New Orleans for the inauguration of a line which would connect the railroad company's property on the Isthmus and its lines to Pacific coast points with the Mississippi valley. "It is now announced," adds the Picayune, "that the Panama Railroad Company proposes to inaugurate a line of steamships between this city and Colon, the Atlantic terminal of the railroad, with a view not only to compete with the transcontinental railroads in the Pacific coast trade, but to also build up a business with the west coast of South America in passengers and freight."

The termini of the road are Colon, on the Atlantic side, and Panama, on the Pacific. The length of the line is 47 miles, and there are thirty-four stations, to wit:

Stations.	Dis- tances from Colon.	Stations.	Dis- tances from Colon.	Stations.	Dis- tances from Colon.
	<i>Miles.</i>		<i>Miles.</i>		<i>Miles.</i>
Ch. Columbus	0. 30	Barbacoas.....	22. 98	Empire	24. 88
Monkey Hill	1. 86	San Pablo.....	23. 48	Culebra	26. 71
Mindi	4. 56	Bailemonos	24. 45	Rio Grande Superior...	27. 30
Gatun	8. 90	Mamei	25. 86	Cucaracha	27. 97
Tiger Hill	8. 17	Juan Grande	27. 46	Paraiso	29. 09
Lion Hill	10. 57	Gorgona	28. 60	Pedro Miguel	40. 34
Ahorca Lagarto	12. 70	Bas Matachin	29. 11	Pedro Miguel Tank	40. 78
Bujio	15. 45	Matachin	29. 97	Miraflores	41. 69
Buena Vista	16. 77	Bas Obispo	31. 06	Rio Grande	42. 98
Frijoles	18. 77	Haut Obispo	31. 94	Corozal	44. 17
Tabernilla.....	21. 55	Las Cascadas	33. 11	Panama	47. 00

The most important intermediate points are Gatun, Bujio, Frijoles, San Pablo, Matachin, and Culebra.

Gatun.—It is at this place that the railroad first strikes the Chagres. The station is on the right and the town on the left bank of the river. It is a very old place and a great point for the banana trade. The Panama Canal crosses the Chagres at this point.

Bujio.—This is the great isthmian center of the banana supply. It is at this point that the first lock of the Panama Canal on the Atlantic side is to be built; boats have ascended the canal within 4 miles of the place. Of course, the canal works have greatly deteriorated since the canal company went into bankruptcy.

Frijoles.—This is the place where the water supply for the town of Colon is secured during the dry season. Excellent drinking water is to be found here, and the Panama Railroad Company has erected small waterworks at this point. This water is delivered by the railroad company to the people in Colon free of cost. Water-tank cars are filled with it and taken to Colon.

San Pablo.—Very near to this place, the railroad crosses the Chagres over an excellent iron bridge. It is the strategical point of the road.

Matachin.—This is the great depot of canal material, and the half-way station. The passenger trains from Colon and Panama meet here. Just now there is only one passenger train each way per day; specials are run when occasion requires. At this point the grade of the road is such as to necessitate two engines up to Culebra for the working of the freight trains. During the coffee season, from December 1 to June 1, the freight traffic is very large.

Culebra.—This is at the summit of the isthmian Andes, perhaps the lowest point in the range of mountains that runs from North America all the way through South America. It is only 333 feet above the level of the sea, and is the dividing plane for the waters to the Atlantic and to the Pacific. The Panama Canal Company has made a cut here of nearly 100 feet in depth.

The condition of the line is excellent, and its equipment sufficient for all purposes. It is a single-track line, broad gauge, with an average grade of 1.6 per cent. The rate for first-class passengers from Colon to Panama is \$4 in American gold, and the same from Panama to Colon. Until 1887, the rate was \$25, gold. The rates to intermediate points are proportionate. There are seven different classes of freight, the rates of which are as follows: First class, 40 cents per cubic foot; second class, 1.2 cents per pound; third class, 0.8 cent; fourth class, 0.6 cent; fifth class, 0.4 cent; sixth class, 0.2 cent; seventh class, nominal. The payment of all dues must be in United States gold coin.

The freight transported by the Panama Railroad during the year 1893 amounted to 200,082 tons. It has, in better years, carried as much as 500,000 tons.

The number of passengers carried by the line during the same period was 42,018; it has carried as many as 1,200,000 in a year.

The line, for the first time in its history, failed to make money in 1893; it lost \$18,000, as stated in the annual report of the Panama Railroad Company for that year. This loss was due, chiefly, to difficulties with the Pacific Mail Steamship Company.

The railroad was built by Colonel Totten, an American, with American capital, and is a credit to American pluck and enterprise, considering that it was commenced in 1850, when the Isthmus was a dense wilderness and the climate most deadly, owing to infected swamps and the intense heat.

There is no comparison, so I am told by people living here then, with the isthmus of to-day and the isthmus of some forty years ago. It took five years to build this railroad, and most of the manual labor was performed by Chinamen. Anyone going over the line can not fail to admire the pluck and energy of the men who made the original survey of this route. It is one of the bravest feats of engineering ever accomplished, and will remain an imperishable monument to those who made it.

It was on the 15th day of April, 1850, that the concession was granted by the Republic of Colombia to the Panama Railroad Company, and it was or is, perhaps, the richest concession ever granted to a corporation by any government, inasmuch as Article II of that concession gave the Panama Railroad the right of way all over the State of Panama from sea to sea, a distance of some 400 miles, and for all kinds of roads, whether by rail, by water, or wagon, besides a large land grant, and many other privileges. However, the Panama Railroad Company virtually ceded the right of way to the Panama Canal Company when the latter purchased the controlling shares of the railroad, and both the Government and the Panama Railroad Company have been great losers thereby, since the former never received its share in money as a consideration for the right of way ceded to the canal company, while the

latter is to-day an asset of the bankrupt Panama Canal Company. The concession is for ninety-nine years, and during the whole of that time the Panama Railroad Company is to pay annually to the Republic of Colombia \$250,000 in gold, besides \$1,000,000 paid in cash when the concession was signed. However, all this money was hypothecated to a firm of New York capitalists as security for a loan needed by the Government of Colombia after the revolution of 1879.

This synopsis of the history of the Panama Railroad is given in answer to the demand "for accurate historical notes upon important highways." I have made it as brief as I could. A whole book of interesting historical items in connection with the Panama Railroad, once wholly controlled by American capital, but to-day controlled by French capital, could be written.

I may add, in the line of historical notes, that Panama was not intended to be the Pacific terminus of the Panama Railroad. The road was to be built to Naos Island, some three miles farther away. It is at, or near, this island that all the steamers anchor, and the Pacific Mail Steamship Company has quite an establishment on it. By the terms of the concession the railroad forfeits annually \$30,000 to the Department of Panama until the railroad reaches Naos, or until vessels are enabled to discharge their cargoes on the main shore. Steps are now being taken to bring this about, the canal company intending to dredge the bay at the Pacific mouth of the canal (La Boca) so as to enable vessels of any size to enter, thus doing away with the expensive system of lighterage now in vogue here. The new city of Panama was established in 1671, very soon after old Panama, which was situated on the east side of the bay, had been destroyed by Morgan, the buccaneer. The entire place was laid in ruins, and he only spared the tower of La Merced, which is still standing. This tower stands there, alone and solitary, the only remaining witness to the horrible deeds committed. It is the tombstone of old Panama, and the grave over which it casts its shadow contains thousands of innocent victims. Old Panama was larger than the Panama of this day, and its wealth was something surprising. Morgan left one of his cannons on the field of his most terrible exploit, as a memento of his extraordinary daring.

VICTOR VIFQUAIN,

Consul-General.

PANAMA, *June 1, 1894.*

THE PANAMA CANAL.

The construction of a canal across the Isthmus of Panama, to connect the waters of the Atlantic and Pacific, and thus provide a great international highway of commerce, was suggested during the earlier period of the Spanish occupation, nearly three and one-half centuries ago. No practical steps, however, were taken until 1876, when surveys were made by French engineers. In 1878, the Colombian Government granted a concession for building the canal, and in the following year

M. de Lesseps, the noted French engineer, who built the Suez Canal, took the matter up. A company was organized, with a nominal capital of 600,000,000 francs (\$115,800,000), to be obtained by popular subscriptions in France, and the work of construction was begun in October, 1881. The canal was to follow much the same route as that of the railway from Colon to Panama. It was to be 54 miles in length; the bottom to lie 28 feet below the mean level of the oceans; the width to be 72 feet at bottom and 160 feet at top, except in the section through the Calebra ridge, where the depth was to be 9 meters (29.53 feet); the bottom width 24 meters (78.91 feet), and the top width 28 meters (91.86 feet). The special difficulties to be encountered were the piercing of the Cordillera and the overflow of the Chagres River and its tributaries. In January, 1884, a little more than two years after beginning the work, but one-thirtieth of the excavation had been completed, although during 1883, a force of 11,000 men was employed. The cost of the work proved to be enormous, and much of the money, it was claimed, was wasted by extravagant management. According to the Handbook of Colombia, published by the Bureau of the American Republics, the canal company had raised, up to June 30, 1886, the sum of 772,545,412 francs (\$137,521,265), or nearly 172½ millions more than the original estimate, and it was then stated that nearly as much more would be required to complete the work. Finally, in March, 1889, work was stopped for want of funds, and provisional administrators were appointed by the French courts. Various schemes of reorganization were proposed, but little of actual importance was effected until 1894, when steps were taken for the formation of a new company, and work was provisionally resumed.

COMMERCE AND TRANSPORTATION.¹

The maritime ports of entry in Colombia are Rio Hacha, Santa Marta, Sabanilla, and Cartagena, on the Atlantic; Buenaventura and Tumaco, on the Pacific. Colon and Panama, on the Isthmus, are free ports. Over thirty regular steamers call at Cartagena, Sabanilla, and other ports, besides Colon and Panama.

The chief method of carrying merchandise to and from the coast is by means of the great rivers, the Magdalena being the most important. With the exception of river traffic and nine short lines of railroads, with a total length of 218 miles, the interior commerce is carried on by means of mules. As the country is mountainous, nearly all freight must be transported by mules as soon as it leaves the rivers. Several concessions have been granted for the construction of new railroads. In July, 1894, Consul Smyth, of Cartagena, reported to the Department (see Consular Reports, 170, November, 1894, p. 416) that a railroad 60 miles

¹Compiled from Handbook of Colombia, published by the Bureau of the American Republics in January, 1892, the Statesman's Year Book for 1896, and United States Consular Reports.

long, from Cartagena to Calamar, on the Magdalena River, had been completed and opened for traffic.

The postal service is well organized, and nearly 7,000 miles of telegraph is in operation, with connections with Ecuador and Venezuela. The foreign cable service is satisfactory.

VENEZUELA.

PORT OF MARACAIBO.

The Red D Line, trading between New York, Curaçao, and the Venezuelan coast, has placed one steamer, the *Maracaibo*, of 1,260 tons, on the through route between New York and Maracaibo, making one round trip monthly. This is a freight and mail boat, carrying no passengers.

Another steamer of the same line, the *Merida*, plies between Maracaibo and Curaçao, but is only an adjunct of the main line, the larger steamers of which do not touch in the consular district of Maracaibo.

There are no coastwise lines.

There are two railways in operation in this district and one in course of construction. Neither, however, can be classed as a through line of traffic, as they extend but a short distance from the lake coast into the interior.

The lines in operation are:

(1) The La Ceiba Railway, owned by a company, extending from La Ceiba, a port on the east coast of the lake, to Sabana de Mendoza, a distance of about 30 miles. This line is in process of extension to the town of Valera.

(2) The San Carlos and Merida Railway, owned by a French company, extending from San Carlos, a town on the River Escalante, at the southern extremity of Lake Maracaibo, to La Vigia, at the foot of the Cordillera, a distance of about 45 miles. The original intention was to build the road to the city of Merida, but this has been practically abandoned. The road now being constructed starts from the town of Encontrados, on the River Catatumbo, and is intended to tap the coffee regions of the western Cordillera, eventually reaching the city of San Cristobal.

As in the case of the railways, the river lines are only local, three rivers being open to navigation, the Escalante, Catatumbo, and Zulia.

The San Carlos and Merida Railway Company has one steamer plying between its river terminus and Maracaibo, and this is only an accessory of the railroad.

One large steamer makes weekly trips from this city to Encontrados, on the Catatumbo River, and there the passengers and freight are transferred to smaller steamers which ascend the River Zulia to Puerto

Villamizar, in Colombia, from which point to the city of Cucuta there is a railway. This last is the nearest approach to a through line existing in this district, although in reality it is merely local.

Of highways there are none, and in no part of the district are there roads for wheeled vehicles.

E. H. PLUMACHER,
Consul.

MARACAIBO, *May 30, 1894.*

PORT OF LA GUAYRA.¹

The city of La Guayra, on the Caribbean Sea, 24 miles by railroad from the capital, Caracas, is the chief seaport of Venezuela. It is connected by cable with the United States, via Curaçao, Santo Domingo, and Cuba, and has a breakwater which has transformed the rough roadstead into a safe and commodious port. Steamers of the Red D and other lines give regular communication between La Guayra and points along the coast, West Indian ports, New York, Southampton, Liverpool, Hamburg, Amsterdam, Havre, Ste. Nazaire, Genoa,² Spanish ports, etc.

RAILWAYS, TELEGRAPHS, ETC., IN VENEZUELA.

According to the Statesman's Year Book for 1895 there were 385 miles of railroad in operation in Venezuela in 1894 and 1,000 miles under consideration. Venezuela is a member of the Postal Union, and in 1893 there were 3,833 miles of telegraph lines. Various centers of trade are also connected by telephone.

Consul Plumacher, of Maracaibo, has sent the Department the following information as to new lines of railroad in Venezuela:

October 3, 1894 (printed in Consular Reports, November, 1894, p. 418):

"Contract entered into by the Government of Venezuela for the construction of a railroad from Puerto Cabello to Carenero. Should this project be carried out the coast towns will receive incalculable benefit, and the railway will be one of the most important in Venezuela. The contract was made by the minister of public works and the Soller Navigation Company, of Barcelona, Spain, represented by Juan Baptista Soles Ferre. The Soller Navigation Company obligates itself to build, within four years from April 2, 1894, a railroad which, starting from Puerto Cabello and passing through La Guayra and the coast towns, shall terminate at Carenero."

November 15, 1894 (printed in Consular Reports, January, 1895, p. 128):

"Contract for the construction of a railway between the city of Coro and Sabaneta, touching at various intermediate points. The line will

¹ Compiled from the Handbook of Venezuela, published by the Bureau of the American Republics in February, 1892, and United States Consular Reports.

² See Consular Reports No. 163, April, 1894, p. 706.

be of considerable local importance, giving easy means of transportation from the interior to Coro. The direct railway communication which now exists between the seaport of Tucacas and the city of Barquisimeto, metropolis and capital of the rich agricultural state of Lara (formerly Barquisimeto), has injured Coro as a shipping and receiving port, and it is only by means of railways from the latter city to the interior that it can regain control of this traffic."

March 12, 1895 (printed in Consular Reports, May, 1895, p. 155):

"*Ceiba railway extension.*—The original road extended from the port of La Ceiba, on the east coast of Lake Maracaibo, 30 miles, to Sabana de Mendoza, at the foot of the mountains of western Venezuela. It was decided to build an extension to the coffee region of the interior, and the project was successfully carried through. Leaving Sabana de Mendoza, the road runs to the eastward for a distance of 30 kilometers (18.64 miles) to a point called El Iobal. There it bifurcates—one branch to extend to the city of Valera, distant about 24 kilometers (14.91 miles) from El Iobal, and the other to the town of Pampanito, 22 kilometers (13.67 miles) from the point of bifurcation. Valera is the metropolis and business center of that entire section, although it is not the political capital, and the products of a vast territory pass through the city on their way to the lake coast for shipment to Maracaibo. In the same manner, all merchandise and foreign imports entered here and destined for that section of the interior are sent to Valera as the final distributing point. The branch line to Pampanito will serve that part of the district lying beyond the influence of Valera, so that, with the completion of these enterprises, all parts of a very large section of productive territory, where both agriculture and commerce are being rapidly developed, will be within easy reach of steam transport to the coast."

April 3, 1895 (printed in Consular Reports, May, 1895, p. 158):

"*Encontrados to La Fria.*—Upon the lapsing of a former concession for the construction of a direct railway, wholly on Venezuelan territory, to tap the great coffee-producing region of the western Cordillera, the Messrs. Boncajolo, of Maracaibo, who built and carried to a successful conclusion the Ceiba road and its extensions, contracted with the Government for the construction of a line which is now being pushed as rapidly as possible.

"Starting from Encontrados, on the right bank of the Catatumbo, accessible to the largest craft navigating Lake Maracaibo, the line follows the general course of that river and its tributary, the Zulia, to a point styled La Fria, 100 kilometers (62.14 miles) from its starting point. An extension of 40 kilometers (24.85 miles) farther to the south would bring the road to the city of San Cristobal, in the very heart of the great agricultural section, and now a commercial center of constantly increasing importance, and this extension will, no doubt, be built; but for the present the terminus of the line may be considered to be at La

Fria. Of these 100 kilometers (62.14 miles), 50 kilometers (31.7 miles) are completed, and trains are running. Within three or four months, the line will reach a point as near San Cristobal as is Cucuta, where coffee from the former city and district can arrive by means of animal transport.

“The completion of the line to this point is anxiously awaited, as then there will be no longer any necessity for crossing the frontier into Colombia, and expenses will be vastly reduced. This applies equally to merchandise from Maracaibo to the interior, and the completion of a few more kilometers of the road will cause an immediate revolution in the transport system between the Cordillera and this port.”

April 4, 1895 (printed in Consular Reports, May, 1895, p. 160):

“Two contracts, the first for a line from Maracaibo to Perija, and the second for a road from a point on the east coast of the lake opposite Maracaibo to the city of Carora, with ultimate extension to Barquisimeto, the most important interior city of Venezuela. The Perija road will communicate with and open up an extensive region of remarkable fertility and rich in mineral products, and the Carora line will give Maracaibo easy communication with the rest of the Republic, from which topographical conditions have kept it, until now, in a state of practical isolation. The city of Barquisimeto has already a railroad to the coast, its terminus being at Tucacas, west of Puerto Cabello, and upon the completion of the line from Lake Maracaibo the conditions of traffic will be changed greatly for the better.”

BRITISH GUIANA.

OCEAN LINES.

This colony can be reached from the United States by two direct lines of steamers, the Armstrong Line and the Royal Dutch West India Mail Service; and indirectly by the Quebec Steamship Company, George Christall & Co.'s steamers, and the Brazilian Steamship Company, which ply between New York, Barbados, and Trinidad, where connections can be made direct to Demerara with either of the following steamship companies: Royal Mail Steam Packet Company, Pickford & Black's Canadian Line, the Compagnie Générale Transatlantique, and the Clyde Line.

The Quebec Company's steamers, however, are those mostly patronized by travelers to this colony. This line is also generally used by the post-office authorities at New York for the conveyance of mails to this place.

First-class fare to Barbados is \$60, and from that place to Demerara, by the Royal Mail Packet Company, the fare is \$19.20.

The Armstrong Line, controlled by Messrs. L. W. and P. Armstrong, of New York City, employs one steamer of 917 tons burden, which

leaves New York once a month direct for Demerara, making the trip (2,200 miles) in about eleven days. This vessel carries mails and freight, and, although a cargo boat, has accommodations for several passengers. The rate for passengers is \$60. The charge for freight is 40 cents per 100 pounds, or by measurement 12 cents per cubic foot, and an additional charge of 5 per cent primage.

The Royal Dutch West India Mail Service is a corporate body under contract with the Netherlands Government for the conveyance of the mails, and employs six vessels, viz:

Steamers.	Tons.	Horse-power.
Prins Willem I.....	1,087	1,250
Prins Willem II.....	1,242	1,250
Prins Willem III.....	1,268	1,250
Prins Frederik Hendrik.....	1,079	1,200
Prins Maurits.....	928	750
Oranje Nassau.....	922	750

These vessels sail from New York for Amsterdam on every third Saturday, calling at Port au Prince, Aux Cayes, Jacmel, Curaçao, Puerto Cabello, La Guayra, Carupano, and Trinidad, arriving at this port in from twenty-three to twenty-six days. After a stay here of about thirty-six hours they proceed to Amsterdam, making one other stop, at Surinam, Dutch Guiana. There are accommodations for from 25 to 30 first-class passengers on each vessel, the fare being \$90 from New York to Demerara. The ordinary freight rate between Demerara and New York is \$2.68 per ton for general merchandise, and for sugar 12 cents per 100 pounds.

RAILWAYS.

The only line of railroad in this colony is the Demerara Railway, a single-track road, controlled by a corporate body, extending along the eastern coast of the county of Demerara from the city of Georgetown to Mahaica, a distance of 20 miles. There is a daily service of five trains, but only two on Sundays. The rate for first-class passengers is about 5 cents per mile, and each passenger is allowed 84 pounds of baggage free of charge. Freight is charged for at the rate of \$2.16 per ton on through traffic. Freight is divided into three classes, viz: Up to 28 pounds, 12 cents; 28 to 56 pounds, 16 cents; 56 pounds to a ton, 24 cents. The distance between intermediate points is so small that there is very little difference made in the charges for through traffic and short hauls.

NAVIGABLE RIVERS.

The rivers are navigated by fifteen steamers, the property of the Sproston Dock and Foundry Company, worked under contract with the Colonial Government. These steamers are small, with a draft of 3 to 5 feet. Some are fitted up for passengers, while others have only deck

accommodations. They leave daily for various parts of the colony, carrying passengers, mails, and freight. The fare for first-class passage averages about 5 cents per mile. Freight is charged for by the parcel or package; for every 100 pounds, or part of 100 pounds, or of a cubic content of 3 feet or part of 3 feet, 8 cents. Passengers are allowed to carry 50 pounds of baggage free of charge, any excess being charged at the same rate as freight.

HIGHWAYS.

There is but one important highway. This is used for the transmission of mails and passengers and is macadamized, being about 16 feet in width. It begins at the terminus of the Demerara Railway and extends along the coast about 50 miles, to the town of Blairmont, Berbice County. This road is under the supervision of the Colonial Government, and is used principally as a mail route, although the mail coaches have accommodations for five persons. The coaches leave daily, upon the arrival of the first morning train from Georgetown. The fare from Mahaica to Blairmont is \$3. No freight is carried on these coaches, but 30 pounds of baggage is allowed each passenger without additional charge.

JAMES SPAIGHT,
Vice Consul.

DEMERARA, June 2, 1894.

BRAZIL.¹

OCEAN LINES.

Hon. Robert Adams, jr., United States minister to Brazil, made a report to the Department of State upon the ocean lines of Brazil, dated October 9, 1889 (printed in Consular Reports No. 112, p. 74), from which the following extracts are taken:

BRITISH FLAG (EIGHT LINES).

(1) *London and Antwerp direct line to Brazil.*—This service is performed by steamers chartered for the purpose, having none of their own. Arrivals here are four and five per month. They generally sail from this port or Santos in ballast homeward, seeking employment. Cargo capacity, 2,000 to 3,000 tons. No passengers. No State aid. Freight rate, 20 to 30 shillings per ton.

(2) *Direct line to Brazil from London, Hamburg, and Antwerp.*—This service is about equal in all respects to that of the above-mentioned company. The steamers of both lines sometimes go as far as Rio Grande do Sul and Porto Alegre. Freight rate, 20 to 30 shillings per ton. No State aid.

(3) *Royal Mail Steam Packet Company.*—From Southampton to River Plate; fortnightly sailings from each end, touching both ways at Brazilian ports; sailing dates strictly observed. This company has a large and magnificent fleet of fast passenger and cargo steamers, and employ the requisite number in this trade to make fortnightly sailings, also giving extra voyages when required. Passenger accommodation, 200 to 250 first class, 150 second class, and 500 to 700 third class; cargo space,

¹No replies to Department circular were received from consular officers in Brazil.

about 3,500 tons each. The steamers now on this route are nearly all new, and make very rapid voyages. Freight rate, 25 to 40 shillings per ton. The company operates in other directions also. Receives State aid.

(4) *Liverpool, Brazil, and River Plate Steam Navigation Company, Limited.*—From Liverpool, London, and Antwerp to Brazilian ports, as far as Santos, and direct to River Plate. Regular arrivals in Rio de Janeiro from Europe, six to eight per month; extra voyages as required; also direct to River Plate ports without calling here. This company has a fleet of over fifty steamers, and have, in addition to these, a great many chartered steamers. It is impossible to give more than a bare outline of their operations. The steamers arriving here and in Santos from Europe are generally sent homeward via United States ports in the absence of cargo in the Plate. Other steamers of the direct service are sent here also to be loaded for United States ports; if no cargo is obtainable, these latter proceed homeward in ballast. In addition to the above service a line subsidized by Belgium (fortnightly sailings) is run from Antwerp direct to the Plate, touching here on the homeward voyage. This line is intended for passengers, and can accommodate 50 to 60 first class, 30 to 40 second class, and 60 to 100 third class. But few of the other steamers have passenger accommodation, and in these it is limited. The cargo capacity of the steamers is from 2,500 to 5,000 tons. The company also operates coastwise from Rio de Janeiro to Rio Grande do Sul, Pelotas, and Porto Alegre, weekly sailings each way. No State aid except to the Belgian line. Freight, 25 to 40 shillings per ton.

(5) *Pacific Steam Navigation Company.*—From Liverpool to the west coast of South America, touching at Brazilian and River Plate ports both ways. The service is fortnightly from each end; sailing dates strictly observed; extra voyages as required. Their fleet is composed of nearly all new and magnificent steamers, and are larger than those of the Royal Mail Company. They operate on the west coast, coastwise, and to Australia also. Freight rate, 25 to 40 shillings per ton. Receives State aid.

(6) *Shaw, Savill & Albion Company, Limited.*—Monthly service from New Zealand to London, calling at Rio de Janeiro. These steamers are very fine and fast. Accommodation for 120 first-class, 100 second-class, and 300 third-class passengers; cargo, about 4,000 tons each. Freight rate, 30 to 40 shillings per ton. Receives State aid. Extra voyages when required.

(7) *New Zealand Shipping Company, Limited.*—Monthly service from New Zealand to London, touching at Rio de Janeiro. Steamers, etc., same as those above described. Freight rate, 30 to 40 shillings. Receives State aid.

(8) *Gulf line of steamers.*—From Liverpool and Antwerp for west coast of South America, touching here once or oftener per month as required. Small passenger accommodation. Cargo space, 3,000 to 3,500 tons each. No State aid.

GERMAN FLAG.

Hamburg-Südamerikanische Dampfschiffahrts-Gesellschaft.—Weekly sailings from Hamburg, calling at Brazilian ports as far as Santos; extra voyages as required; also six to eight sailings monthly direct to Plate ports; these latter call at Rio de Janeiro on the homeward voyages, thus giving from nine to twelve monthly homeward sailings from Rio de Janeiro. Fleet consists of thirty-five steamers, with cargo capacity of 2,000 to 3,000 tons each. Accommodations for 40 to 60 first-class, 30 second-class, and 100 to 200 third-class passengers. Freight rate, 25 to 30 shillings per ton. No State aid.

Robert Sloman Line, Hammonia.—From New York and Baltimore to Brazilian ports as far as Santos, returning to the United States, calling here and at other ports. Fleet consists of steamers with cargo capacity of 2,500 to 3,000 tons each; voyages each way as frequent as possible. No passenger accommodation. Freight rate, 25 to 35 shillings per ton. No State aid.

North German Lloyds.—Monthly and fortnightly sailings from Bremen and Antwerp, as demand requires, for Brazilian ports as far as Santos, and direct service to the Plate, the latter calling here on homeward voyages, thus giving two to four homeward sailings per month from Rio de Janeiro. Steamers accommodate 50 to 100 first-

class, 50 second-class, and 200 to 300 third-class passengers. Cargo capacity, 2,000 to 3,000 tons each. The company has a very large fleet, and operate in other directions also; they put extra steamers in this service as required. Freight rate, 25 to 30 shillings. Receives State aid.

ITALIAN FLAG.

Navigazione Generale Italiana, Società Reunita, Florio e Rubatino.—This company operates from Mediterranean ports in many directions. The service to Brazil and the River Plate is carried on by a very large fleet, which run direct to the Plate. Arrivals here from Europe are three to six per month, as required. Their fleet consists of about one hundred steamers. Can accommodate 50 to 200 first-class, 60 second-class, and 500 to 1,500 third-class passengers. Cargo capacity, 1,500 to 3,500 tons each. Freight rate, 20 to 30 shillings per ton. Receives State aid.

Company La Veloce.—From Mediterranean ports as far as Santos; also direct to Plate. Voyages, two to four per month, both ways, as required. Accommodations for 60 to 70 first-class, 50 second-class, and 600 to 1,500 third-class passengers. Freight rate, 20 to 30 shillings per ton. No State aid.

AUSTRIAN FLAG.

Austro-Hungarian Lloyds.—From Trieste as far as Santos. Regular monthly sailing, fortnightly when required, touching at Brazilian ports both ways. Can accommodate 40 to 100 first-class, 50 second-class, and 100 to 200 third-class passengers. Cargo capacity, 2,500 to 3,500 tons each. Freight rate, 25 to 35 shillings per ton. The company has a large fleet, and puts on steamers as needed. Receives State aid.

Adriatic Navigation Company.—From Fiume as far as Santos, regular monthly voyages, calling at Brazilian ports both ways; extra voyages when required. No passengers. Cargo capacity, 2,000 to 3,000 tons each. No State aid.

FRENCH FLAG.

Messageries Maritimes.—From Bordeaux to River Plate, fortnightly sailings from each end; sailing dates strictly observed; touching at Brazilian ports both ways; also direct service to the Plate. The fleet is composed of magnificent steamers making very rapid voyages. Can accommodate 200 to 300 first-class, 150 second-class, and 700 to 800 third-class passengers. Cargo space, 2,500 to 3,500 tons each. Operate to other parts of the world also; extra voyages as required. Freight rate, 30 to 40 shillings per ton. Receives State aid.

Compagnie Chargeurs Réunis.—From Havre as far as Santos, fortnightly sailings from each end, calling at Brazilian ports both ways; also direct to the Plate, these frequently calling here on homeward voyage; extra voyages as required; operate also to other ports. Can accommodate 50 to 70 first-class, 30 to 40 second-class, and 100 to 200 third-class passengers. Cargo capacity, 2,000 to 2,500 tons each. Freight rate, 25 to 35 shillings per ton. Receives State aid.

Société Générale des Transports Maritimes.—From Marseilles and other Mediterranean ports to the River Plate, calling at Brazilian ports outward and homeward; also direct to Rio de Janeiro and Santos. This company make voyages as frequently as possible, say, two to four times per month, and at times a greater number; they operate to other parts of the world also. Can accommodate 50 to 70 first-class, 21 to 40 second-class, and 700 to 1,500 third-class passengers. Cargo capacity, 2,000 to 3,500 tons each. Freight rate, 25 to 35 shillings per ton. Receives State aid.

BRAZILIAN FLAG.

Companhia Transatlantica Brasileira.—Just organized; will trade from Brazil to north of Europe and Mediterranean ports. Receives State aid.

Companhia Brasileira de Navegação a Vapor.—Three voyages per month as far as Manaus. Very fine and fast steamers; nearly all new. Receives State aid.

Companhia Nacional de Navegação a Vapor.—Frequent regular voyages to southern

ports of Empire and as far as Montevideo, also river service thence to upper Brazil; are constructing a number of new steamers. Receives State aid.

In addition to the three lines, the Government subsidizes a great number of smaller coast lines operating from here and other ports of the Empire.

AMERICAN FLAG.

*United States and Brazil Mail Steamship Company.*¹—Voyages from New York to Santos, calling at Brazilian ports both ways. Number of sailings is about fifteen per annum. Fleet, three steamers. Cargo capacity, 2,500 to 3,000 tons each. Can accommodate 60 to 80 first-class and 60 third-class passengers. Freight rate, 25 to 35 shillings per ton. Receives State aid.

The Lamport & Holt Line, with the following vessels and points of destination:

To Pernambuco, Bahia, and Rio de Janeiro, steamers *Hevelius* and *Coleridge*.

To Santos, Paranagua, Desterro, and Rio Grande do Sul, steamer *Horrox*.

To Pernambuco and Rio, calling at Cabadello, Maceio, Victoria, and Santos if cargo offers. Goods taken for the Southern Brazil coast ports.

To Montevideo, Buenos Ayres, and Rosario. Goods taken for La Plata, Boca, San Nicolas, Colastine, and Bahia Blanca.

Prince Line, James Knott, Newcastle-on-Tyne, from New York to Pernambuco, Bahia, Rio and Santos. Goods taken for the southern Brazil coast ports. John C. Seager, general agent, 2 and 4 Stone street, New York.

Booth Steamship Company, Limited, under contract with the Brazilian Government, for Para, Maranham, and Ceara, and for Para and Manaos, via Barbados. Through bills of lading are issued via Manaos to Iquitos, Peru. Booth & Co., agents, 88 and 90 Gold street, New York.

Norton Line. Steam direct to the River Plate and River Plate to New York, via Rio de Janeiro and other Brazilian ports. Regular semimonthly service New York to Montevideo, Buenos Ayres, Rosario. Norton & Son, managers, New York. Bucknall Nephews, steamship owners, managers, London. Goods taken for La Plata, Colastine, San Nicolas, Bahia Blanca, etc.

United States and Brazil Line from New York and Baltimore. Regular steamers for Pernambuco, Rio de Janeiro, and Santos. Funch, Edey & Co., New York Produce Exchange Annex.

Northern Brazil mail steamers, Red Cross Line. For Para and Manaos, via Barbados. For Para, Maranham, and Ceara. Through bills of lading issued to Iquitos, Peru, via Manaos. For passage, freight rates, and other information, apply to Ship-ton Green, 113 to 117 Pearl street, New York.

Besides these steamship lines, Thomas Norton & Co., 104 Wall street, New York, have a line of packet vessels (sail) for Rio de Janeiro and Santos.

TRAMP STEAMERS.

In addition to the regular lines mentioned, this port is very much frequented by vast numbers of steamers arriving from many ports of the world, principally from Europe; recently quite a number have been coming with cargo from New York and Baltimore. These steamers are vulgarly known as "tramps," and all are, without exception, under the English flag.

I may here mention that the expenses of discharging cargo in this port, which is paid by steamers, amounts to 10 shillings and upward per ton.

Rates on coffee, which is about the only article shipped hence to the United States, will average about 25 cents per bag of 60 kilograms weight, and the expenses of loading same (for steamer's account) is about 14 cents per bag, this quite apart from charges in United States.

¹This company went out of existence in 1893, and its service was replaced by that of the Lamport & Holt Line (British). The steamship lines at present plying between New York and Brazilian ports are:

BRAZILIAN VESSELS FOR COASTWISE TRADE.¹

I transmit a copy and translation of decree No. 227, of December 5, 1894, postponing for two years the operation of decree No. 123, of November 1, 1892, which limits the coastwise trade of Brazil to Brazilian bottoms. I also transmit a copy and translation of the decree No. 123. You will observe that this trade will, upon the operation of the decree, be practically confined to vessels flying the Brazilian flag, except in the instances mentioned in articles 4 and 5. These exceptions are the transportation of goods belonging to the Government; transportation of passengers and their baggage, animals, valuable parcels, perishable agricultural and manufactured products and coin: to bring aid in cases of famine or pestilence; to trade generally in cases of foreign war. Foreign vessels are also permitted to enter ports for shelter or asylum, to discharge portions of a cargo at several ports, to take on cargo at several ports, and sell a cargo in cases of distress, shipwreck, or vis major.

THOMAS L. THOMPSON,
Minister.

DECREE NO. 123, OF NOVEMBER 11, 1892, REGULATING COASTWISE NAVIGATION.

[Translation.]

ARTICLE 1. Coastwise navigation can only be carried on in national vessels.

ART. 2. By coastwise navigation is meant direct communication or trade between the ports of the Republic, within its waters, and of the rivers that flow through its territory.

ART. 3. In order that a ship may be considered national, it is necessary (1) that it be the property of a Brazilian citizen or of a company or corporation with seat in Brazil, managed entirely by Brazilian citizens; (2) that it be navigated by a Brazilian captain or master; (3) that at least two-thirds of its crew be Brazilians.

ART. 4. Foreign vessels are prohibited from entering in the coastwise trade, under penalty of confiscation, but are permitted (1) to load or unload merchandise and articles belonging to the Government; (2) to enter a port for asylum and to leave for another with its cargo within a designated time; (3) to enter a port with a full cargo, and to leave for another with the same entire cargo or with part of it dispatched for consumption or reexportation; (4) to transport from one port to another of the Republic passengers of any class, their baggage, animals, and packages classified as valuable or perishable agricultural and manufactured products and coined valuables; (5) to receive from any or all the ports of the Republic manufactured goods or produce of the country for the purpose of exportation; (6) to bring aid to any State or point of the Republic in cases of famine, pestilence, or other calamity; (7) to carry any kind of cargo from one port to another of the Republic in cases of foreign war, internal commotion, injuries, and prejudice happening to national navigation and trade by cruisers and foreign forces, even if war has not been declared.

ART. 5. Merchandise taken from a port of the Republic can be sold in another, in cases of distress, shipwreck, or vis major.

ART. 6. The vessels of neighboring countries are permitted to navigate the rivers and interior waters according to the terms of the conventions and treaties.

ART. 7. Upon the enrollment of the vessels and crews, they will observe the rules of navigation and inspection which are designated in the regulation that the Executive power formulates for the execution of this law.

¹ Reprinted from Consular Reports No. 175, April, 1895, p. 573.

ART. 8. For five years after the publication of this law, the matriculation of all the personnel of the merchant marine is gratuitous, except the necessary stamps.

ART. 9. National vessels are obliged to have an inspection of the bottoms and machinery every six months, having the pipe and boilers subjected to a water pressure, and once a year the same inspection in a dry dock. These inspections will be gratuitous, and should be requested from the proper department by the proprietors, with eight days' notice; they can be made in any of the ports of the Republic designated in the regulation which will shortly be expedited.

ART. 10. The provisions of this law will not take effect until two years after the publication.

ART. 11. All provisions to the contrary are revoked.

DECREE NO. 227, OF DECEMBER 5, 1894.

[Translation.]

ARTICLE 1. It is decided to prolong the time two years in order that the vessels which carry on the coastwise trade between the sea and river ports of the country may be nationalized in accordance with the provisions of law No. 123, of November 11, 1892.

ART. 2. Revoke all laws to the contrary.

RAILWAYS.

In 1893, the Government of Uruguay issued a large volume, entitled a Treatise on the South American Railways, compiled by Señor Juan José Castro, under direction of the minister of public works. The following information concerning the railways of Brazil is compiled from it:

The railways of Brazil are divided into three groups, namely: The Northern, the Central, and the Southern. The first lies within the States of Rio Grande del Norte, Parahiba, Pernambuco, Alagoas, Sergipe, and Bahia; the second in the States of Minas Geraes, Rio Janeiro, and Sao Paulo; and the third in the State of Rio Grande do Sul. "In each one of the nuclei of railway networks," says Señor Castro, "the lines generally are of local importance and of 1 meter gauge, although, however, some by the conditions and directions are destined to serve the general public traffic, among which we might cite the line from Recife to Sao Francisco in the future it would have when incorporated with the Interoceanic line in the State of Pernambuco; the Central Brazilian Railway; the Santos and Jundiaby Railway; and the principal line of Mogyana in the extensions proposed connecting with the lines running through the States of Goyaz and Matto Grosso as far as the Bolivian frontier."

Among the lines projected which may be regarded as international in character, Señor Castro mentions that of Santos; that from Sao Francisco to the Paraguayan frontier; and that from Recife to Valparaiso "which ceases to be a line of mere Brazilian importance when considered as of South American international character."

In 1852 the Brazilian Government adopted a law providing guarantees and inducements for railway construction. At the present time there are in Brazil 11,043 kilometers (6,862 miles) of railway in working

order; 5,402 (3,357 miles) under construction; 5,175 (3,216 miles) surveyed; 4,414 (2,743 miles) being surveyed, and 13,826 (8,591 miles) yet to be surveyed.

"In view of the enormous size of Brazil," remarks Señor Castro, "and of its extensive coasts being provided with excellent ports, the first necessity was to open to each district its most natural and shortest exit toward the sea, without considering that at some more or less distant date these arteries might become united and form one single network; in this manner were established the three systems which we have indicated in order to meet the demands of the exporting and importing commerce of the interior of the country, affording an easy exit through its principal ports, which in the northern district are Pernambuco and Bahia; in the central district, Victoria, Rio de Janeiro, and Santos, and in the southern, the mouth of the Rio Grande do Sul, its only exit to the Atlantic Ocean, and which is very badly qualified to serve the commerce of that state, whose wants are chiefly supplied through the port of Montevideo and those of the River Uruguay (Salto and Concordia).

"The population of Brazil, already some 15,500,000 souls, its enormous products and commerce, show the necessity for rapid and cheap communication between its states and the interunion of these three independent systems of railways, and to gain this end, which will be of the greatest importance to Brazil, for many reasons, the public powers are allying themselves with private enterprise."

Señor Castro supplies the following table of Brazilian railways actually working in 1892:

Railways.	Length.	Railways.	Length.
State:	Kilometers.¹	Guaranteed by the State—Cont'd:	Kilometers.¹
Baturite	197.6	Lepoldina	1,471
Comocin-Sobral-Ypu	216.6	Minas and Rio	170
Central Pernambuco	72.1	Western Minas	377
Palmareo to Sao Francisco	146.4	Juiz de Fora to Piau	61
Paulo Afonso	115.9	S. Isabel of the Rio Preto	74.5
Alagoinhas to Sao Francisco	322	Rosendo Areas	28.4
Rio d'Ouro	83	Central Macahe	44
S. Amaro Jacu	36	Ribeirao to Bonito	32
Central Brazilian	225	Mogyana (main line, 1887)	740
Central Brazilian	394	Bragantina	52
P. Alegre to Uruguayana	377	Sorocabana	376
Guaranteed by the State:		Paranagua-Curitiba-Lapa	231
Natal to Nova Cruz	121	Thereza Christina	116
Conde d'Eu	141	Rio Grande to Bage	233
Recife-Palmares	124.7	Quarahim to Itaqui	173
Recife-Limoesiro-Tinbauba	141.1	Unguaranteed:	
Ribeirao to Bonito	22	Recife-Caxanga	20
Maceio-Imperatriz	150	Macahe-Campos	96
Bahia-Alagoinhas	123.3	Santo Antonio de Padua	92.7
Alagoinhas-Timbo	83	Rio de Janeiro to Mage	88
Central Bahia	315	Principe do G. Para	91.7
Nazareth Santo Antonio	34	Santos to Jundiaby	139
Nazareth Tram Road	42	Itana (1886)	253
Carravellas Philadelphia (1887)	142	Paulista	242
Itapemirim Alegre	70	Rio Claro	264

¹Kilometer—0.6214 miles.

The most important of the Brazilian railway lines is the Central Brazilian Railway, which has become the artery for the great system of

railway lines converging from right to left toward its own, "which," says Señor Castro, "makes it what the law of 1852 intended it to be, namely, the great factor in the development of the States of Rio de Janeiro, Minas Geraes, and Sao Paulo."

According to a report from the British legation, November 7, 1893 (No. 1321 British Foreign Office Reports, annual series), the number of miles of railroad in Brazil then open for traffic was 6,651; under construction, 3,185; under survey, 5,340; to be surveyed, 9,071.

INTERIOR TRANSPORTATION.

Besides the railroads, the means of interior transportation in Brazil are steamboats and other craft on the rivers, pack horses, and mules. Consul Burke, of Pernambuco, writing in November, 1893 (see Consular Reports No. 160, p. 51), says: "Goods are shipped to the interior by railway, by boats up small steams and rivers, and by pack horses and mules. When it is known that the railway mileage of the entire State of Pernambuco (which is nearly as large as the State of Kansas) is not above 450 miles, it may be inferred that most of the goods to the interior are carried by pack horses or mules. Goods go by train or water to the town on railway or river nearest to the interior towns to which the goods are destined, and are thence transported by pack horses or mules to their destination. It will thus be seen that the pack horse or mule is very largely the motive power of the State.

"A pack horse or mule usually carries from 60 to 80 kilograms (135 to 200 pounds) of weight. If the goods are bulky the weight is less. The box or case in which such goods are put up is from 1½ to 2 feet in length and from 1 to 1½ feet in depth and width, depending, of course, upon the weight, character, and bulkiness of the goods. Two cases are thus carried, one on each side of the horse or mule. The goods are securely fastened and covered with oilcloth."

HIGHWAYS.

In another report from Consul Burke, dated January 20, 1891, from Bahia, printed in Special Consular Reports, "Streets and Highways" (p. 469), the following information about the means of land communication, besides railroads, in Brazil is given:

There are no country roads, and but very little can be said of "city streets."

Communication between towns, where there are no railways to the interior, is by water in small boats or canoes, or by bridle paths on donkeys, mules, or horseback. To go in a carriage of any description 5, 10, 20, 40, or any number of miles, few or many, into the interior, is a thing unheard of and unknown; and this for two very good reasons, viz: First, there are no roads for a carriage, and in the second place, there are no carriages, excepting those owned by livery-stable proprietors, and these are rarely used except for funerals, weddings, and baptisms.

In this city of 200,000 inhabitants, perhaps, there are not over five families that have their own turnout. All the merchandise sent from this city to the interior of the State must be taken to some seaport in small craft and then sent by rail, by river, by donkey, mule, or horse to its destination. Very little is sent by rail, as the number of miles of railway in this State and Sergipe is very limited, so that nearly all the merchandise imported, as well as the exported products, must be taken by water up or down the river, and by donkey or mule, simply because there are no roads.

From the city of Bahia to the southwestern part of the State it requires at least thirty days to make the journey. The journey by rail is 450 kilometers (280 miles), thence by horse or muleback to the San Francisco River, up the river in a small boat, then again by mule, donkey, or horseback till the town in the interior is reached.

Some idea of the difficulties and vexatious delays in traveling in this country may be obtained when it is known that to cover a distance some 200 miles less than from New York to Chicago (twenty-four hours), it takes thirty days in this district—days of discomfort not only in the actual traveling, but also in the eating, drinking, and sleeping. The people are very hospitable, so it is not from this cause the discomfort in traveling arises. It is simply because actual comfort in going from town to town, such as one finds in the States, has never existed here: consequently neither the country nor the people can give what it has not. When one leaves the rail or the boat he simply mounts his horse, mule, or donkey, having provided a guide, if not familiar with the country, and follows the trail, for it is nothing more, till he reaches his destination.

Women who find it necessary to travel must adapt themselves to the same conditions as the men.

RIVER SYSTEM.¹

The main dependence of Brazil for interior transportation is her river system. Some idea may be formed of the extent of this system of internal waterways, by observing on the map the interlacement of the head waters of the southern affluents of the Amazon, on the central plateau of Matto Grosso, with those of the Paraguay flowing to the south. By means of a small canal, which the Portuguese attempted to cut in the last century, a flat-bottomed boat might pass from the mouth of the Rio de la Plata to the mouth of the Amazon through the rivers of this unique system. Brazil has none of the great lakes characteristic of North America, but in the size and importance of its rivers it has no rival in the world.

The river system of Brazil naturally resolves itself into three subdivisions: That of the Amazon, or northern; the Sao Francisco, or

¹Compiled from Handbook of Brazil, printed by the Bureau of the American Republics, 1891.

eastern, and the Parana, or southern. There are many rivers, some of them of considerable size, that empty into the Atlantic between the mouths of the three great rivers which give their names to the three subdivisions of the general system; but by far the greater part of the waters drained from the three great watersheds of Brazil find their way to the ocean through the channels of the three above named.

The possibilities of the navigation of the Amazon and its affluents have only begun to be developed, and yet the following "magnificent distances" are navigated already by steamers: From Belem (Para) to Manaos, 1,100 miles; Manaos to Iquitos, Peru, by River Solimoes, 1,350 miles; Manaos to Santa Isabella, by River Negro, 470 miles; Manaos to Hyutanahan, by River Purus, 1,080 miles; Manaos to Sao Antonio, by River Medeira, 470 miles; Belem to Bayao, by River Tocantins, 156 miles; Leopoldina to Santa Maria, 570 miles; making a total of 5,196 miles of steam navigation on the Amazon and its southern affluents; and this total does not include the navigation of the branches of the above-named rivers, which would increase the amount by some 3,000 miles more.

The great river, Sao Francisco, has its source near Ouro Preto, the capital of the State of Minas Geraes, in latitude 20° south; runs north and east to latitude 9° south, where it turns to the southeast, pours its floods over the wonderful falls of Paulo Affonso, and empties into the Atlantic in latitude 10° 45" south. Above the falls the river is navigated for hundreds of miles by steamers, and from the sea to the falls by larger vessels. Its western affluents mingle their fountains with the sources of the branches of the Tocantins, so that, in many places, but a short distance separates the waters that seek the Amazon to the north and those that reach the Atlantic through the Sao Francisco. A remarkable feature of the Brazilian river system is the commingling of the sources of the affluents of the three subdivisions, which will admit passage from one to the other by boats by cutting short canals, in many cases without the necessity of locks between their head waters.

The River Parana, the main stream of the southern subdivision, receives the waters of its northern affluents from the State of Minas Geraes, where they rise among the sources of those of the Sao Francisco. Its water are navigable by large steamers up to the falls of Guayra, on the western border of the State of Parana, and above these by smaller ones through more than 700 miles. This river receives the waters of the Paraguay, whose sources are in the center of Matto Grosso, near those of the Tapajos, an affluent of the Amazon. The Paraguay is also navigable by steamers from Montevideo for over 2,000 miles; and this is the route taken by troops and passengers from Rio de Janeiro for the capital of Matto Grosso, Cuyaba, which is situated on one of the affluents of the Paraguay.

WATER TRANSPORTATION IN PERNAMBUCO.¹

No canals exist in this consular district nor are any to be built here for some time to come; in fact I do not think that canals will ever be of any use here, owing to the formation of the land and the want of lakes or rivers which could be joined by canals to the great advantage of traffic or commerce, and canals for the purpose of irrigation are not needed in a country where the annual rainfall at times reaches between 80 and 90 inches.

All traffic is carried on here by very primitive river craft, called *barcassos*, and said craft are also used to do coasting business, because they are protected by a coral reef which encircles the coast of this whole consular district, with occasional openings to admit ingress or egress to and from the ocean. This coral reef is about one-half of a mile from the mainland and forms a mighty barrier against the encroachment of the ocean upon the land, and offers these *barcassos* the protection of a river.

In the interior, traffic is carried on by horses. They have the merchandise slung on each side of them; they rest in the middle of the day and travel at night, making only a short stop at midnight. This requires constant loading and unloading of the merchandise, and I would respectfully say just here that the American exporters sometimes lose sight of this fact and export their goods in such frail packages that they will not bear the handling on a long journey of that sort, and are, therefore, not so readily sold as European goods, made where the exporters are aware how goods reach the interior.

ECUADOR.

OCEAN LINES.

The great "ocean lines" to and from Guayaquil are: Two lines from Panama to Valparaiso, touching at Guayaquil—the Pacific Steam Navigation Company (an English corporation), and the *Compañía Sud-Americana de Vapores* (a Chilean corporation). Each has on its line five first-class steamships, of 3,000 tons each. They are all admirably fitted up for both passengers and freight, and are lighted by electricity. These lines carry the foreign mails, and a vessel of each leaves Guayaquil, going north and south every week, and leaving Valparaiso on alternate weeks. None of these vessels touch at other Colombian ports, or at other ports of Ecuador than Guayaquil, but the Pacific Steam Navigation Company has two steamships which ply between Guayaquil and Panama, touching at all the ports of Ecuador north of Guayaquil and at those of Colombia on the Pacific. These carry passengers and

¹ Extract from report of Consul Borstel, of Pernambuco, October 14, 1889; reprinted from *Special Consular Reports*, "Canals and Irrigation."

freight, and the coast mails; the service is fortnightly. All the steamships of these lines are supplied with side hatches and steam windlasses, and it is said that steamships without these time and labor saving appliances can not successfully compete with those which have them.

The English and Chilean lines, long in competition, finally came to the present arrangement: The English and Chilean steamers leave Valparaiso on alternate weeks, and thus there is an English or Chilean steamship touching at Guayaquil, going north every Saturday and south every Monday.

First-class passage: From Panama to Guayaquil, £13 15s. (\$66.90); Guayaquil to Valparaiso, £20 3s. 6d. (\$99.14); Guayaquil to Callao, £8 10s. (\$41.36); Panama to Valparaiso, £30 15s. (\$149.63).

Freight charge from Guayaquil to Colombian Pacific ports, including Panama, is 9 sucres¹ (\$4.62) and 25 per cent additional; to Ecuadorian ports, 7 sucres (\$3.65) and 25 per cent; to Peruvian ports, 12 sucres (\$6.15) and 25 per cent; to Chilean ports, 15 sucres (\$7.69) and 25 per cent.

The distance as sailed from Panama to Guayaquil is 815 miles; from Guayaquil to Callao, 740, and from Guayaquil to Valparaiso, 1,430.

Agents at Guayaquil: Pacific Steam Navigation Company, George Chambers & Co.; Compañía Sud-Americana de Vapores, Seminario Hermanos.

Guayaquil has splendid ocean service to Europe, through the Straits of Magellan, and has one line to New York, the Merchants' Line. There are four lines of steamships, each having a steamer arrive at Guayaquil regularly once a month from England or the Continent.

(1) *Gulf Line*.—The Greenock Steamship Company, an English corporation, called the "Gulf Line," has sixteen steamships in the service, ranging from 1,600 to 3,500 tons register. They are lighted by electricity and fitted to carry passengers and freight. They ply between Guayaquil and Liverpool, Glasgow, and Greenock. The first-class passenger fare from Guayaquil to Liverpool is £50 (\$243.30). Freight per ton is about £2 (\$9.73). These steamers also go to Hamburg and Antwerp. Guayaquil agents, Martin Reinberg & Co.

(2) *Hamburg-Pacific Steamship Line (Hamburg-Pacific Dampfschiff-Linis)*.—These vessels ply between Guayaquil and Hamburg and Antwerp. There are eleven steamships on this line, ranging from 3,000 to 5,000 tons register. They are fitted out specially for cargo, but each can carry from sixteen to twenty first-class passengers. Their regular trips are from Hamburg and Antwerp, but occasionally they touch at Genoa and Cadiz; and on the Pacific coast they make all the principal ports from Valparaiso to San Jose de Guatemala. On the return trip they rarely touch at Guayaquil (they may be signaled at

¹The sucre is worth to-day 51.28 cents in American gold. The value fluctuates with the rise and fall of exchange.

San Jose to call there), but call at the northern ports of Ecuador, where they take large quantities of ivory nuts (tagua) to Germany. Passenger rates to Hamburg and other points are made specially, no regular tariff. Freight per ton: for ivory nuts, £2 (\$9.73); for cacao, £2 10s. (\$12.77), and other freights assimilated. Guayaquil agents, Successors of Daniel Lopez.

(3) *French Pacific Line (Ligne Française du Pacifique)*.—This line comprises two French companies, that of the Maritime du Pacifique and Havraise Péninsulaire de Navigation à Vapeur. There are at present nine steamships on this line, ranging from 3,500 to 5,000 tons register, and from 1,800 to 2,000 horsepower. This line plies between Havre and the Pacific ports of South and Central America, making all ports, great and small, of Chile and Peru, from Punta Arenas (in the Straits of Magellan) to Payta, in Peru, and Guayaquil; thence to San Jose de Guatemala, and finally Puntas Arenas, Costa Rica; Corinto, San Juan del Sur, La Union, Amapala, La Libertad, and Acajutla. They touch at Bordeaux and Liverpool. Guayaquil agents, Reyre Bros. & Co.

(4) *Pacific Steam Navigation Company*.—This company has eight first-class steamships on its line from Liverpool to Valparaiso, connecting with its own and the Chilean steamers from Valparaiso to Guayaquil and Panama twice a month. The steamships of this line are each of 6,000 tons register, admirably fitted up, as is the case with the other steamers of this company, for both passengers and freight. They carry the foreign mails, and touch at the Atlantic ports of South America, at Rio Janeiro and south; they touch at Lisbon and sometimes at Vigo, Spain.

(5) *Kosmos Line*.—There is another German fleet of steamships, composing the Kosmos Line (Deutsche Dampfschiffahrts-Gesellschaft Kosmos), of fifteen steamers, ranging from 1,700 to 3,000 tons register, and making somewhat irregular connections at Guayaquil about once a month from Hamburg, and coming through the Straits, generally make all the ports on the Pacific. Guayaquil agents, E. Rohde & Co.

(6) *Merchants' Line*.—This line has four steamships plying between New York and Guayaquil. The service is somewhat irregular—once a month or once in two months. One of the steamships is of 2,067 tons register, and the others somewhat over 3,000 tons. They are English ships, chartered by W. R. Grace & Co., of New York, and the Guayaquil agents are E. Rohde & Co.

COMMUNICATION WITH THE INTERIOR.

As to "railways," "navigable rivers and canals," and "first-class highways," there are none in Ecuador worth mention, except for local traffic and travel. To get to Quito and the interior, there are two principal routes. The best is by steamboat, daily, to Bodegas (Babahoyo), eight hours; and there take mules to the interior. The other route is

to take the railroad to Chimbo, 50 miles, and there take mules. There is but one piece of what may be called "highway" in the Republic of Ecuador. From Ambato to Quito there is a stage line which takes up the mule-backers at Ambato and gives them a fairly good drive to Quito, 60 to 70 miles, in about eighteen to twenty hours. This is the only carriage road in the Republic outside of the cities, and was built by Garcia Mareno. The old highway of the Incas, from Quito to Cuzco, has long since gone to ruin, whatever may have been its character. The whole of the commerce of this great seaport with the interior mountain country goes on muleback by one of the routes named. The commerce of the great valley in which Guayaquil is situated is carried on by the steamboats and lesser craft of sail or oar on the almost innumerable rivers and esteros (creeks or bayous) which intersect it in almost every direction, and by the railroad which taps the principal sugar-growing district.

A part of this, the only railroad in Ecuador, may be mentioned on account of overcoming great obstacles in construction. That part of it, from Duran (the terminus just across the river from Guayaquil) to Yaguachi, about 20 miles, is constructed through the tembladeros (a succession of lagoons and marshes, called on the old English maps "The Great Yaguachi Lagoon"), which are without consistent soil and overflowed by the tides flowing up the River Guayos from the Gulf of Guayaquil, 35 miles distant. Only a small part of the roadbed is on dry land, and that in the tembladeros had to be constructed of rock carried from the Capra hills, at Duran. The rock was filled in until it ceased to sink, and now appears to be stationary and solid. The railroad is operated by the Government, having been taken from the contractor, Kelly, who, after building the railroad through the lagoons, failed to comply, it is said, with his contract in extending the railroad from Chimbo to Sibambi, in the direction of Quito. Manager of the railroad, Señor Don Juan G. Sanchez.

GEO. G. DILLARD,
Consul-General.

GUAYAQUIL, *July 6, 1894.*

PERU.

RAILWAYS.

In consideration of the cancellation of the foreign debt of Peru, with the exception of the line to Moquegua, the entire railway system was turned over by the Government to the Peruvian Corporation, an English company, for a period of sixty years from date of contract. This system is as follows:

	Miles		Miles
Paita to Piura (broad gauge)....	59.28	Mollendo to Arequipa—Cont'd.	
Paita to intermediate stations:		Mollendo to intermediate stations:	
To Huaca	18.6	To Cachendo.....	34.74
To Nomara.....	23.18	To Joya.....	54
To Sullano	38.5	To Vitor	75.91
Pacasmayo to Yonan Guadalupe		To Tingo.....	104.95
(broad gauge).....	57.17	Arequipa to Puno (broad gauge).	217.49
Pacasmayo to intermediate		Arequipa to intermediate stations:	
stations:		To Yura.....	18
To San Pedro	4.97	To Vincocaya	95.96
To Calasnique.....	8.21	To Cruceer Alto.....	117.98
To Cultambo.....	14.29	To Maravillas	155.22
To Chafau	15.53	To Juliaca	188.96
To Chepen	23.21	Juliaca to Marangani (broad	
To Tolton	24.05	gauge).....	116.83
To Pay Pay	27.45	Juliaca to intermediate sta-	
To Monte Grande	34.58	tions:	
Salaverry to Ascope (narrow gauge)	47.22	To Pucara	34.79
Salaverry to intermediate sta-		To Santa Rosa	82.02
tions:		Eten to Ferrenafe-Potapo (broad	
To Trujillo.....	4.63	gauge).....	48.46
To Chicama.....	8.85	Eten to intermediate stations:	
To Chochope	29.20	To Pueblo Eten.....	2.05
Chimbote to Suchiman (narrow		To Monsefu	4.10
gauge).....	32.37	To Chiclayo.....	11.74
Chimbote to intermediate sta-		To Lambayeque	19.44
tions:		To Ferrenafe.....	29.82
To Rinconada.....	13.67	To Pomalca	18.57
To Vinos.....	20.50	To El Combo.....	21.68
Lima to Ancon (broad gauge)....	23.61	To Tuman	24.79
Lima to intermediate stations:		Pimentel to Lambayeque (nar-	
To Reparticion	5.28	row gauge).....	14.91
To Infantas	8.07	Pimentel to intermediate sta-	
To Puente Piedra.....	13.36	tions:	
Callao to La Oroya (broad gauge).	193.83	To Chiclayo.....	8.70
Callao to intermediate sta-		Lima to Callao (broad gauge)...	8.51
tions:		Lima to intermediate stations:	
To Montserrate.....	8.07	To Salud.....	3.10
To Santa Clara.....	18.39	To Legua	4.77
To Chosica.....	33.55	To Bella Vista.....	6.44
To San Bartolome.....	47.22	To Mercado (Callao)....	7.15
To Surco	56.54	To Santa Rosa	7.47
To Matucana.....	64	To Chucuito	8.07
To San Mateo	77.98	Lima to Chorillos (broad gauge).	8.69
To Chicala.....	86.38	Lima to intermediate stations:	
Pisco to Ica (broad gauge).....	45.98	To Mirafloza	4.84
Pisco to intermediate stations:		To Barranco.....	7.08
To Mille Diez y Ocho....	18.02	To Buen Pastor.....	8.37
To Guadalupe	38.52	To Chorillos Station.....	8.26
Mollendo to Arequipa (broad		To Chorillos (Torneamea)	8.82
gauge).....	106.88	Lima to Magdalena (broad gauge)	3.72
Mollendo to intermediate sta-		Arica to Tacna (broad gauge)....	39.14
tions:		Total length of railways....	917.46
To Mejía.....	11.74		
To Tambo.....	19		

Passenger rates (first class).

From—	To—	Miles.	Fare.
Lima	Callao.....	8.51	<i>Sols.</i> ¹ <i>Dollars.</i> 0.40 = 0.1904
Lima	Chorillos.....	8.69	.40 = .1904
Callao	La Oroya.....	133.83	11.10 = 5.2685
Lima	Ancon.....	23.61	1.60 = .76
Paita	Piura.....	59.28	2.96 = 1.406
Puno	Arequipa.....	217.49	14.00 = 6.65
Puno	Ensenada.....		20.00 = 9.50
Pimentel.....	Lambayeque.....	14.91	.60 = .265
Pisco	Ica.....	45.98	2.40 = 1.14

¹ Average value of sol in 1894, as per United States Mint valuation, 47.50 cents.

For illustration, the general schedule of freight rates of the Paita and Piura Railway and that of the principal route the famous Peruvian Central Railway (Ferrocarril Central del Peru), are given, as follows: Paita and Piura Railway, 97 kilometers (59.28 miles), first class, 7 centavos per cubic meter per kilometer (3.325 cents per 35.316 cubic feet per 0.62137 of a mile); second class, 5 centavos (2.375 cents); third class, 10 centavos per ton of 1,000 kilos per kilometer (4.75 cents per ton of 2,204.6 pounds); fourth class, 8 centavos (3.8 cents); fifth class, 2½ centavos (1.187 cents).

THE PERUVIAN CENTRAL RAILWAY.

The Peruvian Central Railway is justly regarded as one of the most marvelous achievements in railway engineering in the world. For a distance of 106 miles, starting at Callao, this road rises continuously from a plane of 8 feet 7 inches above sea level to the snow-capped summit of the Andes, which it crosses at the altitude of 15,665 feet. The line runs through a series of mountain gorges and along the banks of the cascades of the Rimac River. The precipitous slopes, which are now barren, and the abodes of the vicuña and the llama, were in the days of the ancient empire of the Incas, terraced and kept in a high state of cultivation by the Peruvians. The traces of this terracing remain and are plainly visible. The Peruvians are content nowadays to cultivate the narrow vales skirting the Rimac, and their little chacras (farms) add interest to the picturesqueness of the route. The road makes numerous zigzags along the mountain slopes, crosses deep chasms, and passes through numberless tunnels. On the eastern slopes of the Andes, the scenery and climate undergo a complete change, and at Oroya, the present terminus, which is 12,178 feet above sea level, the traveler feels that he is almost in sight of the tropical vegetation of the boundless plains of the Amazon. He is in reach of the promised land of the picturesque Montana, with its varied climates, products, flora, forestry, and animal life. In imagination, he sees the Peru of the future, when the immigrants will have dotted the plains watered by the Amazon and its tributaries with fields of sugar cane, coca, coffee, tobacco, cotton, and numerous cereals, and other valuable plants.

The following itinerary will give an idea of the grandeur of the Peruvian Central Railway, starting from Callao:

Stations.	Distances from Callao.		Elevation.
	Kilometers.	Miles.	Fet.
Callao	0.0	0.0	8.7
Callao Shops	1.4	.9	-----
La Legua	6.9	4.3	-----
Lima, Monserrate	12.4	7.7	494.9
Lima, La Palma	13	8.1	-----
Lima, Desamparados	13.5	8.4	-----
Lima, Viterbo	14.5	9	-----
Santa Clara	29	18	1,311.7
Chosica	53.4	33.2	2,800.6
Puruy Bridge	64.8	40.3	-----
Corcona Bridge	65.7	40.8	-----
Cochachaca	72.4	45	4,622.6
San Bartolome and V.	75.8	47.1	4,958.4
Verrugas Bridge	83.5	51.9	5,839.4
Cuesta Blanca Tunnel	85	52.8	6,001.1
Surco	89.9	55.9	6,660.9
Challapa Bridge	98.4	61.1	7,504.1
Matucana	102.3	63.6	7,784.8
Quebrada Negra Bridge	105.4	65.5	8,054.1
Tambo de Viso Bridge	110.7	68.8	8,706.5
Chaupichaca Bridge	117.5	73	9,472.6
Tamboraque and V.	120.6	74.9	9,826.9
Aruri and V.	122.8	76.3	10,094.5
San Mateo	126.3	78.5	10,534.1
Infiernillo Bridge	129.4	80.4	10,919.9
Caceray, double V.	130.3	81	11,033.4
Anchi Bridge	132.7	82.5	11,366.4
Copa Bridge	135.5	84.2	11,638.8
Chicla, lower V.	140.4	87.2	12,215.5
Chicla, upper V.	144.8	90	12,697.1
Casapalca	152.9	95	13,606.2
Paso de Galera Tunnel (highest point on the line)	170.7	106.1	15,665.2
Yauli	193.2	120.1	18,420.8
Oroya	219.6	136.5	12,178.7

The railways of Peru were made under contracts executed by an American, Henry Meiggs, a man endowed with indomitable energy, courage, and perseverance. Henry Meiggs was broadly liberal in his dealings. "There was nothing small about him," it is said. He was a fine judge of men, as his selections of subordinates have proved. His liberal instincts led him to return benefits to the country which had bestowed benefits upon him, and he has left standing several works illustrating his public-spiritedness and gratitude to Peru. His memory is revered by Peruvians, and they have given the name Monte Meiggs to the Andean peak whose crest rises 17,575 feet above sea level and at whose base is the famous Galera tunnel, which pierces the Andes at the altitude of 15,665 feet.

The name of another American, William Henry Cilley, is associated with the fame of Henry Meiggs. The rôle played by Cilley in the colossal engineering achievements which make the line from Callao to La Oroya perhaps the most wonderful in the world, and to behold which is worth coming to Peru from distant lands, is thus narrated by Mr. A. D. Hodges, jr., in his obituary notice of Mr. Cilley:

Henry Meiggs having taken contracts with the Peruvian Government for an extensive system of railroads, Mr. Cilley went to Peru in 1870, and in 1871, began the work on the Pacasmayo road. Hardly had he got matters there well organized, when he

was called to take charge of the famous Oroya road, where difficulties had been encountered which threatened to become insurmountable. But Mr. Meiggs had staked his reputation on the building of this road, and turned to Mr. Cilley as the one who of all men was best fitted for the task.

The laborers, who were foreign importations, generally of the toughest classes, were dying by hundreds of the Verrugas fever. Many of the engineers were disheartened and afraid to reside on the line. Jealousies were rampant. Food, tools, powder, everything, in short, had to be brought from other countries and then transported over miles of dangerous trails on the backs of animals. The natural obstacles were so unusually great, even for South America, that the ablest engineers obtainable had pronounced the construction of the road beyond San Bartolome a practical impossibility. With some misgivings, Mr. Cilley assumed the charge. He built hospitals, established the camps in the most healthful localities, organized his forces, and was ever the foremost in positions of danger and difficulty. Day and night, he labored with an energy impossible to small men. He often went for weeks without sleeping in a bed, and for months without more than two or three hours rest out of twenty-four. Fresh obstacles were met with fresh resources and daring inventions. The Verrugas bridge, with central pier 252 feet high, was erected without false works and without a single casualty. The Horseshoe tunnel was run in a circle in the solid mountain simply to gain grade, an idea more fully developed afterwards in the "spiral" tunnels of the Saint Gothard road. The long Galera tunnel was perforated at an elevation of nearly 16,000 feet above the sea. The roadbed and tunnels were completed almost to Oroya. The construction, carried on under unparalleled difficulties, cost less per mile of finished road than the more easily built sections below San Bartolome. The history of the world records no equal feat in railroad building.

OCEAN LINES.

Regarding the ocean traffic with Europe by way of the Straits of Magellan, a distance of between 14,000 and 15,000 miles, the purposes of this report will be sufficiently attained by noting the arrivals of steamships at the port of Callao during 1894, which were as follows: Hamburg, 31 steamships, with a total registered tonnage of 53,075; Liverpool, 29 steamships, with a total registered tonnage of 55,300; Havre, 9 steamships, with a total registered tonnage of 20,444. These vessels are fitted out mainly to carry cargoes, and their accommodations for passengers are limited. Their agents here do not furnish freight schedules and seem loth to give rates except to shippers applying to them for business purposes.

Of prime importance to the United States is the ocean route between Panama and Valparaiso. This route is monopolized by the Pacific Steam Navigation Company (English) and the Compañía Sud-Americana de Vapores (Chilean) in combination. They bring five mails every two months from the United States at irregular intervals of one and two weeks, respectively. Each of these companies runs a steamship every alternating week to Panama and return to Valparaiso, and another steamship to Pimentel, Peru, in like manner, touching at intermediate ports and making stoppages of from three to four days each way at Callao. This gives to each company eight steamships in active operation. They are excellent vessels, capable of making the voyages

in less than half the time they occupy, and are specially built in England for this trade. In point of accommodations for passengers they combine the comforts of the old floating palaces of the Mississippi, the Sound steamers, and the ordinary ocean steamship. They have upper-deck staterooms and upper-deck promenades. The route is perhaps the most uniformly smooth and pleasant in the world, and cheap rates would make it a favorite one for the tourist. A voyage on one of these steamships is usually one of little risk, and of much pleasure and comfort. Their officers are courteous, capable, and careful men, and they seek in every way to please the traveler. The registered tonnage of these vessels will average 1,500. At Panama they connect with the Pacific Mail steamships to San Francisco and across the Isthmus; at Colon, with steamships to New York, New Orleans (one way), and with principal European ports. At Valparaiso connection is made with steamships of the Pacific Steam Navigation Company in the direct trade with Europe by the Straits of Magellan.

The Pacific Steam Navigation Company was founded in the forties by William Wheelwright, an American, at one time United States consul at Guayaquil, Ecuador. Mr. Wheelwright having failed to interest American capitalists in the undertaking, went to London, and, after years of hard labor, succeeded. Two paddle-wheel steamships of a few hundred tons burden were the pioneers of the present line, which is one of the richest and most powerful in the world. The Chilean company was started in competition and for a while rates went down. Concluding that both lines would stay, their directors came to terms and, as might be expected, to the great injury of the helpless people of this coast. The effect of the combination upon the progress and development of the marvelous resources of these countries may well be imagined.

Both companies are prospering, and recently the Chilean company has added to its superb fleet the *Loa*, a magnificent vessel.

The following schedules of rates furnish the explanation for the absence of American trade in these parts and for the steady decrease of American residents:

Passage rates (first class): From Callao to Guayaquil, 702 miles, £5 10s. (\$26.76); to Panama, 1,537 miles, £17 10s. (\$85.15); to Valparaiso, 1,271 miles, £11 17s. (\$57.67). Steerage: From Callao to Panama, \$28.73; from Panama to Guayaquil, 835 miles, £8 10s. (\$41.36); from Panama to Callao, 1,537 miles, £20 (\$97.32); from Valparaiso to Callao, 1,271 miles, £11 5s. (\$54.74).

By direct route the distance from Panama to Callao is 1,340 miles, and from Panama to Valparaiso, 2,611 miles. The steamers take from seven to eight days to make the voyage from Panama to Callao. At Callao they make a stay of three or four days. It then takes them from seven to nine days to go from Callao to Valparaiso.

New Orleans is 1,370 miles from Colon, and New York 2,025. Either port, therefore, is no farther from Callao than is Liverpool from New York. The voyage between the two last-named ports across the Atlantic is easily made in seven days. Valparaiso being but 1,271 miles from Callao, and San Francisco but 3,200 miles from Panama, the possibilities open to American enterprise on this coast, when it is borne in mind that its trade goes almost bodily by way of the Straits of Magellan to Europe, over stormy routes of from 14,000 to 16,000 miles, can be easily perceived.

Freights from Panama to Callao.

	Sols.	Dollars.
Rice, sacks of 190 pounds, each.....	1.20	= 0.57
Rice, sacks of 100 pounds, each.....	.60	= .28½
Sugar, refined, in loaf or sacks, quintal ¹.....	.80	= .38
Sugar, granulated, in sacks, quintal.....	.70	= .312
Barrels, empty, 18 gallons, each.....	.30	= .142
Barrels, empty, 30 gallons, each.....	.50	= .237
Barrels, empty, 60 gallons, each.....	1.00	= .475
Casks, empty, 90 gallons, each.....	1.50	= .713
Brown sugar, in sacks, quintal.....	.70	= .312
Beans, in packages (arroba), 25 pounds.....	.55	= .261
Beeswax, in sacks or barrels, quintal.....	.75	= .335
Flour in sacks, quintal.....	.50	= .237
Shovels, in bundles of ¼ dozen.....	.75	= .261
Potatoes, in sacks, quintal.....	.50	= .237
Lumber, per 1,000 feet.....	30.00	= 14.25
Burnt rum, barrels, 18 gallons, each.....	.90	= .427
Spirits, barrels, 18 gallons, each.....	.60	= .285
Boat oars, each.....	.70	= .312
Launch oars, each.....	.90	= .427
Carts, 2-wheel (unmounted), each.....	30.00	= 14.25
Carts, 4-wheel (unmounted), each.....	40.00	= 19.00
Plows, American, each.....	1.60	= .76
Merchandise, not described, per ton.....	12.00	= 5.40
Horses, less than 6, each, \$17; over 6.....	15.00	= 7.125
Cattle, less than 6, each, \$15; over 6.....	12.00	= 5.40
Mules, less than 6, each, \$12; over 6.....	10.00	= 4.75
Sheep, each.....	2.00	= .95
Asses, each.....	7.00	= 3.125
Hogs, each.....	5.00	= 2.375
Dogs, each.....	5.00	= 2.375

In addition, 2 sols (95 cents), per ton are payable for embarkation expenses at Panama, and 1 sol (47.5 cents) per box containing 2,000 sols (\$950).

Specie, via Panama: Bank of England, London, and Bank of France, Havre or Paris, 1 per cent; Hamburg or Havre, 1½ per cent; New York, 1½ per cent; San Francisco, 2 per cent; Central America and Mexico, 2½ per cent.

Trade and intercourse with the United States, when they break through this barrier, have, besides, to meet the additional charges of

¹ Peruvian quintal = 101.61 pounds.

steamship transportation to San Francisco, or the charges of the Panama Railroad and the steamships from Colon to New York, or the West India liners (one way) to New Orleans.

Not a single steamship navigates these waters under the Stars and Stripes, and so far as is observable, the efforts of the average American merchant and manufacturer are confined to sending circulars and catalogues, when the real issue to get trade is *transportation*.

These exorbitant charges for travel and freights operate effectually as a blockade against American trade and intercourse. They deprive the people of this coast of the advantages that access to the market of the United States would give them. They increase the cost of the products, restrict their sale to the markets of Europe, and limit the intercourse between the various localities along the coast to the favored classes.

By force of arms, the nations of Europe are parceling out among themselves the continent of Africa, and by skillful combinations of ocean transportation, are controlling the trade, if not the destinies, of our twin continent of South America.

Our Pacific Coast States and their neighbors might, with profit to themselves and to the great relief of these countries, initiate the movement to overcome the obstacles to American intercourse by establishing a line of fast American steamships between San Francisco, Valparaiso and intermediate points operated on the "live and let live" principle. Connecting with the two railways crossing the Isthmus, the first from Coatzacoalcos to Salina Cruz, and the other from Colon to Panama, these steamships could receive support from the freights and passengers from the United States that would come to the Gulf termini of the two railroads referred to, to be transported to this coast.

The vast importance of this question is obvious, and it can not too soon receive serious consideration.

LEON JASTREMSKI,
Consul.

CALLAO, *March 18, 1895.*

BOLIVIA.

Bolivia's only railroad, the Antofagasta and Bolivia Railway, is owned by an English company, but is rented for a term of years to the Huanchaca Mining Company, who work it; a guarantee of 6 per cent is given jointly by the Huanchaca Company and the Bolivian Government.

The line extends from Antofagasta, Chile, on the Pacific coast, to the mining town of Oruro, with a branch from Uyuni to Pulacayo (Huanchaca mine).

The distance from Antofagasta to the chief points on the line are as follows:

Antofagasta to—	Kilometers.	Miles.
Salinas (nitrate field).....	128	= 79.54
Calama (town).....	238	= 147.89
Ascotan (borax lake).....	350	= 217.49
Ollague (frontier).....	435	= 270.31
Uyuni (junction).....	610	= 379.05
Uyuni to—		
Poopo (town).....	250	= 155.35
Oruro (town).....	319	= 198.23
Pulacayo (mine).....	32	= 19.08

The total distance from Antofagasta to Oruro is 933 kilometers (580.55 miles).

The line is in good condition, but short of rolling stock; there are good stations at Antofagasta, Calama, Uyuni, and Oruro, and workshops at Antofagasta and Uyuni. The track is single. The gauge is 75 centimeters (30 inches).

At Oruro, there are two up passenger trains weekly, two freight trains and one composite train, and the same number down; from Uyuni there are two up and two down freight trains daily, and from Salinas, about five. The passenger trains run between Oruro and Antofagasta in three days, running only in daytime. Special trains have come up to Oruro in twenty-three hours.

The freights are calculated from Antofagasta to Ollague (the Chilean frontier) in Chilean currency; present exchange, dollar equals 17 pence (34 cents); and from Ollague to Oruro and Uyuni to Pulacayo in Bolivian currency; present exchange, dollar equals 21½ pence (43 cents).

First-class passenger fare, 4½ cents per kilometer (0.6214 of a mile); general freight upon goods, 1 cent per 100 kilograms (220.46 pounds) per kilometer, plus 25 per cent on Chilean section; general down freight, one-half cent per 100 kilograms per kilometer, plus 25 per cent on Chilean section. Ores shipped in bulk are allowed a reduction of 25 per cent on the above for the whole distance.

In the transport of salt in bulk, a reduction of 30 per cent on the general rate has lately been granted.

The altitudes of the chief points above sea level are:

	Meters.	Feet.
Antofagasta.....	3.42	= 11.2
Salinas.....	1,341.70	= 4,410
Calama.....	2,265.77	= 7,434
Ascotan.....	3,965.99	= 13,012
Ollague.....	3,696.24	= 12,126
Uyuni.....	3,659.80	= 11,996
Poopo.....	3,711	= 12,192
Oruro.....	3,698	= 12,129
Pulacayo.....	4,114.44	= 13,497

Highest point on Uyuni-Pulacayo branch, 4,152.98 meters (13,625 feet).

The only engineering work of any magnitude on the whole line is an iron bridge over the gorge of the Calama River, the rails being at a height of 105 meters (413 feet) above the water.

The up freight is chiefly general merchandise and machinery, and the down freight ores of silver, tin, and antimony, bar silver, and nitrate and borax.

GERARDO ZALLES,
Consul.

LA PAZ, *May 20, 1895.*

INTERIOR TRANSPORTATION.

The Handbook of Bolivia published by the Bureau of the American Republics in 1893, contains the following information as to means of transportation in Bolivia:

The public highways in Bolivia are either national or municipal. The national are built and maintained by the Government from the annual appropriations made therefor by the national Congress. They communicate with the principal cities and mining centers of the Republic. The topography of the country is such as to admit of but few wagon roads east of the high table-lands of western Bolivia.

The most expensive national thoroughfares, both in cost of construction and maintenance, are those built by Indian labor in the upper Andes for the exclusive use of pack animals. Numerous troops of mules, burros, and llamas daily toil up and down these narrow and tortuous trails or wend their way through the deep and narrow passes and around the sharp and precipitous angles of the Cordilleras, bearing their burdens of tropical fruits, coca, cacao, coffee, etc., from Yungas and other warm valleys along the eastern declivities of the Andes to the markets of La Paz and other cities in exchange for flour, dry goods, alcohol, etc. The vast interior commerce of Bolivia, as thus carried on, is a genuine surprise to every foreigner visiting the country, and especially as it is conducted almost entirely by Indians.

The construction and maintenance of the municipal roads is under the control of the several municipalities. These roads, as a rule, connect the principal cities with the adjacent towns and settlements, and for the most part are well built. One of the best in the country is the Arce avenue, connecting the city of La Paz with Obrajés, a small village 3 miles distant. This road, which is the principal driving course of the city, was completed this year at a cost of about 75,000 bolivianos (\$34,625). Perhaps the finest municipal highway in the country is that connecting Cochabamba with the baths of Calacala. Those of Sucre, the capital of the Republic, are also well built, and are among the best carriage roads of Bolivia. The best long-distance roads are those connecting the city of La Paz with Chililaya (Puerto Perez), the Bolivian port on Lake Titicaca, 45 miles distant, and with Oruro, a distance of 150 miles. The municipal roads of La Paz and other cities are maintained in much

the same way as are the country roads in Ohio and other parts of the United States, all male citizens between certain ages being obliged to work on the public highways one day in each six months or pay in lieu thereof 50 cents (24 cents in United States money), the sum allowed the Indians therefor per day, who, with but rare exceptions, do this class of work.

Regular stage lines are maintained as follows:

	Miles.
La Paz to Chililaya, to connect with the lake steamers.....	45
La Paz to Oruro	150
Oruro to Cochabamba.....	123
Oruro to Laguinillas	135
Cochabamba to Sucre	195
Potosi to Sucre.....	77
Total stage service.....	725

In addition to this, there is now under construction a stage road from Tarija to Tupiza.

RAILROAD CONNECTIONS.

In his report on the railways of Bolivia to the International American Conference, then in session at Washington (February, 1890), the Bolivian delegate, Señor Juan Francisco Velarde, says:

The central location of Bolivia has retarded the development of its railroads, since it has been obliged to wait until the lines of the neighboring countries should approach its own frontiers before undertaking their extension, as in the case of those from Mollendo to Puno, and from Arica to Tacna, in Peru, which still remain idle within their respective limits, and that of the Central North Argentine Railway, which is now nearing Jujuy, with every probability that it will be extended as far as the Bolivian frontier.

Bolivia has three lines of communication with the Pacific Ocean: (1) by the Antofagasta and Oruro Railway;¹ (2) by the Mollendo and Puno Railway, in connection with the Lake Titicaca and Desaguadero River steamers; (3) by the Arica Railway.

Arica Railway.—The Arica Railway runs from the Chilean port of Arica to Tacna, a distance of 47 miles. From here the road is to be extended via Corocoro to La Paz. This proposed extension covers a total distance of 294 miles. At present traffic is carried on between La Paz and Arica by means of mules and llamas. Owing to the short distance to the coast by this route the commerce of La Paz, Oruro, and Cochabamba has hitherto largely passed this way. The prolongation of this line to La Paz will be attended by unusual engineering difficulties and enormous cost in ascending the steep acclivities of the Western Cordillera, over which it must pass.

Mollendo and Puno Railway.—This is a standard-gauge road running from the Peruvian port of Mollendo, via Arequipa, to Puno, on Lake Titicaca, a distance of 325 miles. From here communication is had with Bolivia by the Lake Titicaca steamers crossing to Chililaya, a

¹Already described in consular report from La Paz.

distance of 110 miles, and thence to La Paz, 45 miles, across a practically level plain, with the exception of the winding descent into the city, which covers a distance of 3 miles over one of the best constructed gravel roads met with in any country.

The Mollendo and Puno Railway was opened to traffic in 1870, in connection with the steamers on Lake Titicaca and the Desaguadero River, which are owned and operated by the same company. The Peruvian bondholders, who now own the road, recently secured a concession from the Bolivian Government for the construction of a railway from Desaguadero, the southern terminus of lake navigation, to La Paz, a distance of 66 miles. The object of this proposed road is to hold the La Paz traffic against the competing line of the Antofagasta Railway Company, about to be extended to that city from Oruro.

In addition to these several routes to the Pacific Ocean, the configuration and vast area of eastern and southern Bolivia give rise to two additional channels of communication; north by way of the Amazon and south by way of the La Plata to the Atlantic seaboard.

PROJECTED RAILROADS.

Recognizing the importance of placing the eastern part of the Republic, which, like the western part, has its own distinctive resources and trade, in direct communication with the Atlantic Ocean, the Bolivian Government has recently granted liberal concessions for the construction of railways from the interior of the country to the navigable tributaries of the Amazon and La Plata.

These concessions embrace the following new lines of road: (1) A railway from Oruro to Cochabamba, and thence to Trinidad, on the Mamore, which has its outlet to the Atlantic through the rivers Madeira and Amazon. (2) A railway from La Paz through the rich province of Yungas to the head of navigation on the Beni River, which unites with the Mamore at the Bolivian port of Bella Vista to form the Madeira. (3) A railway from Cochabamba to Santa Cruz de la Sierra, the capital of the rich and extensive Department of Santa Cruz, and thence to Puerto Pacheco, on the Paraguay River. (4) The extension of the Paraguay and Bolivian standard-gauge railway now under construction from Asuncion, on the Paraguay River, to the frontier of Bolivia, and thence to be built through Bolivian territory to Sucre, the capital of the Republic. This road, of which Gen. Thomas O. Osborne, of Chicago, is the president, follows up the famous valley of the Pilcomayo through what is known as the Gran Chaco, which possesses a dry and fertile soil and a mild and healthful climate; while the Bolivian extension is bounded on either side by some of the richest mining districts of the Republic. From Sucre it is proposed to continue this road via Oruro, La Paz, and the eastern shore of Lake Titicaca to Santa Rosa, in Peru, where it is to unite with the railway system of southern Peru now being extended from that point to Cuzco. If this road is built, it

will not only be the most important railway in Bolivia, but will furnish, in connection with the line now under construction from Buenos Ayres to Asuncion, continuous railway connection between Cuzco, the ancient capital of the Incas, and Buenos Ayres, the capital of the Argentine Republic, over a track of uniform gauge and covering a total distance of about 2,000 miles. It will also be connected with the sea by the Paraguay and La Plata rivers, whose waters are navigable for ocean steamers as far as Asuncion, the terminus of the road, and for river steamers several hundred miles farther up. (5) A railway from Uyuni, on the Antofagasta line, to La Quiaca, on the Argentine frontier, to meet the proposed extension of the North Central Argentine from Jujuy. A branch is also contemplated from Uyuni to Potosi. As this road, if built, will furnish to Bolivian traffic an important and much-needed outlet to the Atlantic seaboard, its promoters have secured perhaps the most liberal railway concession ever granted by the Bolivian Government.

TELEGRAPHS.

Bolivia has telegraphic communication with Peru, Chile, and the Argentine Republic, and thence by cable with the United States and Europe. The following lines are now in operation: La Paz to Tacna; La Paz to Desaguadero, on the Peruvian frontier; La Paz to Oruro (opened July 16, 1892); Oruro to Uyuni; Sucre to Potosi; Potosi to Huanchaca; Potosi to Cotagaita; Potosi to Colquechaca; Cotagaita to Tupiza; Cotagaita to Camargo; Tupiza to La Quiaca, on the Argentine frontier; Tupiza to Tarija; Huanchaca to the Chilean frontier. Total length of lines, 1,500 miles.

TRADE ROUTES.

Nature has denied to Bolivia the usual facilities for trade enjoyed by most countries. Her foreign and internal traffic must traverse long distances, precipitous mountains, and inhospitable plains. Her principal trade routes are through Chilean and Peruvian territory to the Pacific seaboard, although considerable traffic passes to the Atlantic Ocean, via the Argentine Republic and over the Amazon River and its tributaries through Brazil. The Pacific coast trade is carried on through the Peruvian port of Mollendo and the Chilean ports of Arica and Antofagasta.

The Arica route.—The shortest course is that via Arica, which involves a land transit of 240 miles from La Paz across the Cordillera of Tacora to Tacna, and thence by railway to Arica, 40 miles distant. Pack mules usually occupy about seven days, donkeys nine days, and llamas fifteen days in making this journey to and from La Paz. The trade of the Departments of Oruro, Cochabamba, and, in part, that of La Paz, is carried on through this port. But for official returns, the enormous traffic claimed for this precipitous mountain route would seem incredible. In the annual report for 1890 of the director-general

of statistics of the number of cargoes of merchandise and sundry articles imported to Bolivia during 1889 through the custom-house at Arica, and either from thence or from Tacna transported by mules, donkeys, and llamas across the Cordilleras to the provinces of Oruro, Potosi, La Paz, Cochabamba, and Sucre, the following totals are given:

Cargoes transported:	Number.
By mules	11, 935
By donkeys.....	24, 522
By llamas.....	25, 999
Total	62, 456

Having a total weight of 394,040 arrobas, or 9, 851,000 pounds.

As the average cargo for a mule is 225 pounds, for a donkey 150, and for a llama 100 pounds, the amount of freight thus carried over the Cordilleras to the interior of Bolivia from this one port would furnish cargoes for 43,782 mules, or 65,673 donkeys, or 98,510 llamas, or an average of 69,321 pack animals. While there are no statistics showing the amount of freight exported during 1889, it is fair to conclude that, as the annual exports of Bolivia are more than twice its imports, at least as much cargo was transported by this route to the coast as from it during this period, thereby making the total for the year not less than 19,702,000 pounds, and requiring a corresponding increase in the number of pack animals to transport it.

The recent extension of the Antofagasta Railway from Uyuni to Oruro is likely to divert much of this traffic to the all-rail route to Antofagasta. This, however, will be more than recovered to the Arica and Tacna Railway upon the extension of its line to Oruro and La Paz, as is now proposed. This route and that of Arica, together with their extensions to Potosi, traverse one of the richest mineral districts of the globe.

Mollendo route.—The principal part of the trade from La Paz and the lake provinces, including that of the rich copper districts of Corocoro, is by steamers up the Desaguadero River and across Lake Titicaca to Puno, and thence by the Mollendo, Arequipa and Puno Railway across Peru to Mollendo. The distance from La Paz is 479 miles, viz, land transit from La Paz to Lake Titicaca, 45 miles; lake transit, 110 miles; railway transit to the coast, 324 miles.

The Bolivian traffic by this route is something enormous, and is steadily increasing. It is not uncommon to see from 1,000 to 1,500 mules receiving and discharging cargo at Chililaya, the Bolivian port of Lake Titicaca, for La Paz and other interior towns.

Antofagasta route.—This is also a continuous railway route, extending from Oruro, 150 miles south of La Paz, to the Pacific coast at Antofagasta, distant from Oruro 573 miles and from La Paz 723 miles. The recent extension of this narrow-gauge line from Uyuni to Oruro, a distance of 312 miles, which was opened to traffic April 29, 1892, makes it a competing line for the Pacific coast trade with that of the Mollendo

and Puno standard gauge and the lake and river steamers owned and operated in connection therewith.

The great bulk of the commerce of the Departments of Chuquisaca, Potosi, and of the southern part of Oruro, is transported by this Antofagasta line, notwithstanding the Argentine North Central Railway is rapidly approaching the southern frontier of Bolivia, being now opened to traffic as far north as Jujuy.

Argentine route.—A fourth and longer outlet is that through Argentine territory to the Atlantic. The commerce of the province of Tarija and, to some extent, that of Potosi and Chuquisaca, passes this way. This route involves a land transit of about 770 miles from Pupiza and Tarija, the location of the south Bolivian custom-houses, to Jujuy, the terminus of the North Central Railway, and thence 836 miles by rail to Rosario, on the Parana River, and thence 246 miles by steamer to the Atlantic.

The great distances to be traversed by this route are shown by the following table:

	Miles.
Buenos Ayres to Rosario by steamer.....	240
Rosario to Jujuy by rail.....	836
Jujuy to—	
Tarija and Tupiza by cart road.....	267
Potosi by cart road.....	420
Sucre by cart road.....	507
Cochabamba by cart road.....	717
Uyuni (Antofagasta Railroad station) by cart road.....	300
La Paz by rail and cart road.....	762

The amount of tin, silver, bismuth, and other products passing this way for the month of January, 1889, according to the custom-house valuations, was 123,951.55 bolivianos (\$58,860), of which 112,405.25 bolivianos (\$53,874) were exports and 10,946.30 bolivianos (\$4,986) were imports. Assuming that this was an average month, the annual traffic by this course is, in round numbers, about 1,500,000 bolivianos (\$712,500).

Paraguay River route.—This route extends from Puerto Suarez and Puerto Pacheco, farther south on the Paraguay River, and about 475 miles eastward from Santa Cruz de la Sierra down the Paraguay and La Plata to the Atlantic Ocean. These are comparatively new ports, established to meet the demands of the growing trade of eastern and southeastern Bolivia with the Atlantic seaboard.

As there are no published reports of the commerce of these ports, it can not here be even approximately given. If the projected railway from Santa Cruz de la Sierra to Puerto Pacheco, and that of Gen. Thomas O. Osborne, of Chicago, from Asuncion to Sucre, are built, the Paraguay River is destined to become one of the most important and profitable trade routes of the Republic.

Amazon River route.—This outlet extends from Villa Bella, the Bolivian port at the confluence of the Mamore with the Madeira River, thence via the Madeira (or Madera) and Amazon rivers through

Brazil to the Atlantic Ocean. In addition to about 35,000 quintals (3,549,700 pounds) of rubber annually exported from northern Bolivia via the Purus and Amazon, large quantities of this valuable product are brought down the Madre de Dios, Beni, and Itenez (Guapore) rivers to Villa Bella, and thence shipped to Europe.

CHILE.

RAILWAYS.

State lines.—The present terminus of the State Great Trunk Line, which starts from Valparaiso, is Temuco, the length being 564 miles, but the future terminus will be Puerto Montt. The Great Trunk Line is comprised of three divisions, viz, Valparaiso to Santiago, including Andes branch; Santiago to Talca, including Melipilla line and several branches; and Talca to Talcahuano and Traiguén and branches. The distances are:

	Miles.
First division:	
Valparaiso to Santiago.....	114
Llallai to Los Andes.....	31
Second division:	
Santiago to Talca.....	162
Melipilla.....	38
Palmilla.....	40
Third division:	
Talca to San Rosendo.....	155
San Rosendo (junction) to Talcahuano.....	53
San Rosendo to Robleria (junction).....	34
Robleria to Traiguén.....	66
Robleria to Victoria.....	60

Victoria to Temuco, in course of construction. A branch of 26 miles is also being built from Coigue to Mulchen. The prolongation of the Great Trunk Line from Temuco to Osorno, 204 miles, has also been commenced, in two or three places, in the Provinces of Valdivia and Llanquihue.

The surveys and estimates for the prolongation of the Palmilla branch from Alcones to Pichilemu, 34 miles, have been completed. Surveys are being made of the Quilpue to Casa Blanca section, 25 miles (Melipilla and Santiago line).

The Vilos, Illapel, and Salamanca line, 80 miles, is in course of construction.

The branch from Calera to Ligua and Cabildo, 46 miles, is in course of construction, and is partially opened to traffic.

The line from Talca to Constitucion, 53 miles, is in course of construction, and is partially opened. The Parral to Cauquenes branch, 31 miles, is in course of construction.

The State also owns the Chanaral line, 40 miles, and the Huasco and Ballenar line, 30 miles. The tendency of public feeling is that the State should take over all the private lines. Negotiations are actually in progress for the purchase of the Coquimbo Company's lines and the partially commenced Transandine line.

Private lines.—The private lines, commencing from the north, are:

	Miles.
Arica to Tacna.....	39
Iquique to Pisagua and branches.....	250
Mijillones to Cerro Gordo.....	18
Antofagasta to Bolivia boundary line.....	350
Taltal.....	51
Copiapo and branches.....	151
Carrizal and branches.....	50
Coquimbo to Serena, Ovalle, and Panulcillo.....	86
Serena to Vicuna.....	49
Tongoi to Tamaya.....	34
Penco to Concepcion.....	9
Arauco Company's lines (Concepcion to Curtilanhue).....	59
Total.....	1,146

All of these lines, with a trifling exception, are single track and generally in good condition.

There is no fixed rate for freight or passengers of so much per mile as in some countries, but traveling on the State lines at the present value of the legal-tender currency ranks among the cheapest in the world. As an example, the fare from Valparaiso to Santiago, first class, 114 miles, is \$1.56, United States gold.

The facilities for traveling by road and rail will compare favorably with those of many older and more populous countries.

The Copiapo line was opened in 1851 and was the first in the Southern Hemisphere.

The first section of the Great Trunk Line, Valparaiso to Vina del Mar, was opened in 1854; and the inauguration of the first division, from Valparaiso to Santiago, was in 1863.

Owing to the mountainous character of the country, many of the roads and railways afford numerous examples of excellent engineering ability.

One perceives at once upon examining the map of Chile that the national system of railways when completed will be a great central trunk line, running from north to south, with subsidiary lines branching off to the various seaports.

HIGHWAYS.

The main highways of the country are kept in very good order, and, as a rule, admit of the passing of two vehicles. Communication varies according to district requirements.

OCEAN LINES.

As Valparaiso is an important seaport, there are various steamship lines running therefrom to Europe and the United States, the following being the most important: The Pacific Steam Navigation Company and the Gulf Line Company run each a line of steamers to Europe, via the Straits of Magellan. Two German companies, a French company, and Lamport & Holt also run lines to Europe. The Merchants' Line (W. R. Grace & Co.) run between Valparaiso and New York.

All of these lines obtain a share of the coasting trade, but that is chiefly monopolized by the Pacific Steam Navigation Company and the South American Steamship Company's lines, which latter is under the Chilean flag. These two lines each run a steamer every two weeks alternately to and from Panama, carrying the United States mail.

The steamers of the several lines are as follows:

SOUTH AMERICAN STEAMSHIP COMPANY.

Name.	Net tonnage.	Horse-power.	Name.	Net tonnage.	Horse-power.
Aconcagua	3,000	3,100	Limari	900	650
Imperial	3,000	3,000	Lumaco	700	450
Mapocho	3,000	2,000	Malleco	700	450
Malpo	2,950	2,060	Chillan	650	450
Cachapoal	2,755	1,900	Biobio	600	450
Lautaro	2,600	1,600	Lirca	600	400
Amazonas	2,500	1,800	Cautin	600	400
Itata	2,600	1,500	Maule	250	240
Copiapo	1,800	900	Pndeto	300	230

PACIFIC STEAM NAVIGATION COMPANY.

Name.	Net tonnage.	Name.	Net tonnage.
Coastwise:		Coastwise—Continued:	
Santiago	3,190	Bolivia	1,925
Arequipa	3,190	To Europe, via the Straits of Magellan:	
Patagonia	2,868	Sorata	6,050
Puno	2,390	Orellana	5,000
Pizarro	2,160	Gallicia	3,829
Quito	1,750	Liguria	4,668
Serena	2,394	Polosi	4,290
Mendoza	2,169	Orcana	5,000
Ecuador	1,768	Britannia	4,132
Ayacucho	1,925	Iberia	4,702
Coquimbo	1,821	Cargo steamers:	
Arica	1,771	Inca	4,000
Manabi	1,041	Magellan	4,000
Arauco	801	Antisana	4,000
Chala	598	Araucania	2,877
Casma	592	Sarmiento	4,000
Osorno	532		

THE GULF LINE.

Name.	Net tonnage.	Name.	Net tonnage.
Gulf of Suez	1,535	Gulf of Martaban	2,447
Gulf of Akaba	1,975	Gulf of Lions	2,662
Gulf of Papua	1,971	Gulf of Ancud	2,716
Gulf of Venice	2,923	Gulf of Florida	2,965
Gulf of Mexico	3,082	Gulf of Genoa	3,448
Gulf of Trinidad	2,361	Gulf of Bothnia	3,452
Gulf of Corcovado	2,361	Gulf of Siam	3,432
Gulf of Guinea	2,438	Gulf of Taranto	3,432

MERCHANTS' LINE (W. R. GRACE & CO.).

Name.	Tonnage.		Horse-power.
	Gross.	Net.	
Condor.....	3,053.12	1,957.88	1,400
Cacique.....	3,052.10	1,951.11	1,400
Capac.....	3,052	1,951	1,400

JAMES M. DOBBS,

*Consul.*VALPARAISO, *November 22, 1894.*

PARAGUAY.

RIVERS, BOUNDARIES, AND HILLS.

Paraguay proper is limited by natural boundaries. It lies entirely to the eastward of the Paraguay River. The vast territory west of this river which was conceded to Paraguay, in 1877, under the arbitration of President Hayes, is not yet opened to traffic, and is inadequately explored. It is known by the names Paraguay and El Gran Chaco, and except along the western shore of the Paraguay River, it is uninhabited by white men and without the range of commerce.

Paraguay proper has been settled for centuries, and it is to it that my report of traffic must necessarily be confined.

The Rio Apa is the northern boundry of Paraguay proper, separating it from the Brazilian Province of Matto Grosso. It runs almost due east and west, having a slight inclination to west by south. Its intersection with the Paraguay River (at latitude $22^{\circ} 5''$ south, longitude $60^{\circ} 10''$ west), makes the northwest limit of Paraguay. South of the Rio Apa, following its course irregularly, at about half a degree distant from it, is a line of hills (the Sierra de las Puntas) forming the watershed of the Rio Apa, from the south, and the Rio Aquidaban, from the north. The Rio Apa takes its rise in a range of hills (the Sierra Ubaracayu) and that point (latitude 22° south, longitude $57^{\circ} 40''$ west from Paris) forms the extreme northeastern boundary of the Republic.

This range of hills continues nearly due south for about 60 miles, separating Paraguay from the Brazilian Province of Matto Grosso, and helping to form the eastern boundary of Paraguay proper, when the hills take an eastward turn and are crossed by the Parana River.

The Parana River at this point becomes very much narrowed, being forced through a gorge and forming the famous cataract of La Guayra. From this cataract southward, Paraguay proper has a river boundary.

The Parana River, continuing in its southern course, furnishes the remainder of the eastern boundary of Paraguay; it then sweeps in a long curve toward the west, marking the southern boundary between Paraguay and the Argentine Republic. Just above the Argentine town

of Corrientes, the Parana joins the Paraguay River and forms the southwest limit of Paraguay (latitude $27^{\circ} 15''$ south, longitude $60^{\circ} 58''$ west).

The Paraguay River ends at the point of confluence with the Parana. At this point there is a town called Paso de la Patria, the extreme southwestern town of Paraguay, while the town of Apa, at the confluence of the Rio Apa and the Rio Paraguay, is the extreme northwestern town. Between Apa and Paso de la Patria, runs the Paraguay River, forming the entire western boundary of Paraguay proper.

Besides the range of hills mentioned as forming the boundaries of Paraguay, there is another range with numerous offshoots, hillocks, and buttes, passing irregularly down the center of the Republic from north to south. The waters from the eastern slopes run into the tributaries of the Parana River, while their western slopes furnish water to the streams running into the Paraguay.

It is necessary to understand this arrangement of hill and watershed in order that, in treating the subject of river navigation, its possibilities may be made manifest. None of the hills are more than 1,500 feet in height, yet they cause Paraguay to be the best watered land in South America, keeping the country perpetually green and prolific.

HIGHWAYS.

Those who established settlements here made four principal highways. Starting from Asuncion, these may be described as follows:

First. The southern road, keeping near the bank of the Paraguay River and touching the towns of Lambare, Ypane, Villeta, Cliva, Villa Franca, Villa del Pilar, Humaita, and Paso de la Patria, where the Paraguay River loses itself in the Parana.

Second. The road through the missions established by the Jesuits, the best populated thoroughfare of the Republic, passes through the towns of San Lorenzo, Capita, Ita Carepegua Quindy, Caapucu, Villa Florida, Santa Rosa, and Carmen to Encarnacion.

Third. The east road, through Luque, Aregua, Itagua, Pirayu, Paraguari, Ibilimi, and Villa Rica. This is the road which the railway follows.

Fourth. The north road, passing through Trinidad, Limpio, Emboscado, and Arroyos y Esteros, where it separates, one branch keeping along the shore of the Paraguay River, through Itacurubi, Rosario, San Pedro, Concepcion, San Salvador, and Apa; and the other, turning toward the east at Arroyos y Esteros, and taking in the towns of Catigua, San Estanislao, and Villa Ygatimi.

There is no legal standard of width prescribed for these roads. They are very rarely fenced, and frequently wind to avoid obstacles, such as hills, swamps, woods, etc. Landowners seldom complain of roads that wind through their unimproved property. In such cases, the privilege of the landowner yields to the necessities of the people.

These four principal roads are connected by cross roads at all principal points, but none of them are macadamized, or have any pretension to paving. They are traversed by ox teams carrying freight, and by ponies carrying passengers. After a heavy rain, they are impassable at certain points, where gullies or washouts may be formed, but the loose soil of Paraguay favors rapid drying of the roads, and they seldom remain impassable for more than a few days. In fact, nature has furnished Paraguay with a remarkable compensation for muddy roads, for just in proportion as the roads become impassable, the rivers and creeks become navigable, and rafts and scows alternate with bullocks and ponies in performing the functions of transportation. The roads described are all free, no toll being collected for their use.

There are no canals, and, with the exception of here and there a short one to get around some rapids, there will be no necessity for building any.

There are a few stagecoaches and diligences on some of these roads, but they lead a precarious existence.

Ponies are so cheap (\$12 will purchase a good one) and the scenery so beautiful that travelers do not care to be cooped up in diligences.

Away from the lines of the rivers and railroad, mails are distributed by pony riders having appointed circuits, and the service is generally accounted good.

RAILWAYS.

There is but one railway in the country. It is owned by a private corporation and runs from Asuncion to Pirapo, a distance of 250 kilometers (155.4 miles). Pirapo, its present terminus, should hardly be dignified by the name of a town. The ultimate terminus of the road is to be the city of Encarnacion, on the Parana River, where communication may be made with the Argentine town of Posadas, opposite Encarnacion, to connect with the Argentine system of railways at that point. The prolongation of the road from Pirapo to Encarnacion is involved in disputes which it would be out of place to discuss in an article like the present one. It is to be hoped that they will find a speedy solution under the new Government that has just been elected, so that the road may have the benefit of a well-populated town, on the margin of a navigable river, for its terminus, instead of a few sheds on the edge of a swamp, as at present.

I am indebted to Mr. White, the present manager, for the following data concerning the road, and I think no one can deny that its services are more cheaply supplied than even most roads in the United States.

The road is broad gauge, single track, 250 kilometers (155.4 miles) in length. Principal points: Asuncion to Paraguari, 72 kilometers (44.8 miles); Paraguari to Villa Rica, 28 kilometers (17.4 miles); Villa Rica to Pirapo, 150 kilometers (93.2 miles).

Trains run between Asuncion and Villa Rica daily; between Asuncion and Pirapo every other day. First-class passage is \$15, Paraguayan paper, for the 250 kilometers (155.4 miles), which at the present

rate of exchange of 600 per cent gold premium, would be about 1 cent per kilometer (1.6 cents per mile).

The freight rates per ton (gold) for the entire distance, 155.4 miles, are as follows: \$10.30, \$2, and \$1.50, for first, second, and third class, respectively.

Trains run at about 14 miles per hour, including stoppages. They are not exclusively passenger trains, carrying freight also. Recently I made the trip as far as Villa Rica, and would pronounce the condition of the line good. The remarkable freedom from accidents that this road has enjoyed would corroborate this assertion, although I can not speak as a railway expert.

TRAM LINES.

Besides the railway, Asuncion is supplied with two tram lines that are now under one management. One of these lines is extended from the suburbs of the city to San Lorenzo, a town about 10 miles distant on the Mission road already described.

The trams leaving the city suburbs are hauled by steam locomotives to San Lorenzo. They go every few hours, and as the road has been surveyed beyond San Lorenzo with the intention of extending it, I think it worth while to mention this steam tram line, as it may be the nucleus of what is destined to become an important railway in Paraguay.

RIVER NAVIGATION.

There are three lines of steamers running to Paraguay, all having their starting point at Montevideo.

Platense Line.—This is a British line. The steamers run once a week; their average tonnage is 914. Freight charges from Montevideo to Asuncion (1,100 miles), \$5 (gold) per ton; first-class passage, \$40, and second-class passage, \$20. The trip takes a week, counting all stoppages. The vessels are finely equipped with electric lights and modern appliances. This line has an auxiliary at Corrientes, running once a week to Posados, on the upper Parana, opposite the Paraguayan city of Encarnacion, to which it is connected by ferry, and another weekly service auxiliary from Asuncion to Concepcion, on the Paraguay River. Both these auxiliaries charge about \$10 and \$5 (gold) for the trip, first and second class, respectively. As the passage money is paid in paper, it is difficult to calculate in such a fluctuating medium. These figures may be taken as a fair average, however.

Trasportes Fluviales.—This is an Argentine line, and has the same itinerary as the *Platense*; no regular auxiliary steamers; average tonnage, 800 tons; rates of freight and passage, 10 per cent less than the rate of the *Platense* Line; steamers run about once a week to Asuncion.

Lloyds Brasileiro.—This is a Brazilian line, and is heavily subsidized by the Brazilian Government; average tonnage, 600. These vessels

have to be lighter than those of the two lines previously mentioned, as they run to the Brazilian Province of Matto Grosso, as far as Corumba, 600 miles above Asuncion, where an auxiliary line of small steamers extends navigation some 500 miles farther north, to the town of Cuyaba. The rates of passage and freight are the same as by the Platense Line.

The rates quoted refer to the trips made against the stream; a discount of about 10 per cent may be calculated for the down river trips.

The tributaries of the Paraguay River are rarely navigated by steamers; sometimes a light-draft steamer ascends the Tebicuary as far as Villa Florida. There is, also, a small steamer on the Jejuy River, but it runs irregularly, most of the navigation being by rafts and scows (*chatas*.)

OPPORTUNITIES FOR AMERICAN ENTERPRISE.

I can not leave this subject without referring to two means of transportation in which the United States excel and which are unknown in this part of the world.

The first is rapid running, light-draft, river steamboats, with broad decks, on and from which freight can be rapidly shipped and discharged. All the steamers before referred to have the cut of ocean steamers and are built of iron. It is said that this is necessary to enable them to make the passage between Montevideo and Buenos Ayres, which is sometimes quite rough; but whatever is gained at Montevideo must be lost at the upper end of the trip, for, besides being much more expensive in construction and vastly inferior in beauty to our river steamers, a year seldom goes by that they have not, during several months, to anchor 30 miles below Asuncion and unload passengers and freight to vessels of lighter draft. Their plan of construction prohibits navigation of the smaller rivers and creeks, so that a considerable interior territory remains excluded from the benefits of cheap transportation and the development of the resources of the country to that extent retarded.

The second is the electric trolley system, so cheap in its construction as compared with the steam railroad and its bulky locomotives, heavy ballasted roadbed, and enormous consumption of fuel. Increased encouragement to trade between the United States and Paraguay would bring these two means of transportation within reach of this country, to the mutual advantage of both, while transportation must still continue to drag along in the old channels, dominated by backward European methods, so long as Paraguayan products find almost their only market in the Argentine Republic or in Europe.

EBEN M. FLAGG,
Vice-Consul.

ASUNCION, *September 20, 1894.*

URUGUAY.

OCEAN LINES.

The following are the principal ocean lines whose steamers touch at this port: Royal Mail Steamship Company, Pacific Mail Steam Navigation Company, Messageries Maritimes, Chargeurs Réunis, Norddeutscher Lloyd, Navigazione Generale Italiana, La Veloce, Hamburg-Südamericanische Dampfschiffahrts-Actien-Gesellschaft, Kosmos, Hansa, Compañía Trasatlántica Española, Lamport & Holt Line, and Lloyds Brasileiro.

All the lines enumerated are owned by corporations—English, German, French, Spanish, Brazilian, and Italian.

Royal Mail Steamship Company.—English; not subsidized; termini, Southampton and Buenos Ayres; main points touched, Vigo, Lisbon, St. Vincent, Pernambuco, Bahia, Rio de Janeiro, Montevideo; fortnightly service; condition of the line, good; number of vessels and their capacity not obtainable, on account of changes in progress.

Pacific Steam Navigation Company.—English; termini, Liverpool and Pacific coast; main points touched, Lisbon, Pernambuco, Bahia, Rio de Janeiro, Montevideo, Punta Arenas, and Valparaiso; fortnightly service; condition of line, good.

Messageries Maritimes.—French; subsidized; termini, Bordeaux and Buenos Ayres; main points touched, Lisbon, Rio de Janeiro, Montevideo; monthly service; condition of line, good.

Chargeurs Réunis.—French corporation; subsidized; termini, Havre and Buenos Ayres; main points touched, Lisbon, Pernambuco, Bahia, Rio de Janeiro, Santos, and Montevideo; weekly service; condition of line, good.

Norddeutscher Lloyds.—German corporation; subsidized; termini, Bremen and Buenos Ayres; main points touched, Antwerp, Lisbon, Bahia, Rio de Janeiro, and Montevideo; condition of line, good.

Navigazione Generale Italiana.—Italian corporation; termini, Genoa and Buenos Ayres; main points touched, Marseilles, Barcelona, Rio de Janeiro, Santos, and Montevideo; condition of line, good.

La Veloce.—Italian corporation; termini, Genoa and Buenos Ayres; main points touched, Barcelona and Montevideo; condition of line, good.

Hamburg-Südamericanische Dampfschiffahrts-Actien-Gesellschaft.—German corporation; termini, Hamburg and Buenos Ayres; main points touched, Montevideo; condition of line, good.

Kosmos line.—German corporation; termini, Hamburg and Pacific coast; main points touched, Montevideo and Punta Arenas; condition of line, fair.

Hansa.—German corporation; termini, Bremen, Hamburg, and Buenos Ayres; main points touched, Brazilian ports and Montevideo; freight line; no passenger accommodations.

Campaña Trasatlántica Española.—Spanish corporation; subsidized; termini, Barcelona and Buenos Ayres; main points touched, Cadiz and Montevideo.

Lloyds Brasileiro.—Brazilian corporation; subsidized; termini, Rio de Janeiro and Montevideo; main points touched, Santos, Desterro (Porto Alegre), Rio Grande, and Pelotas. This corporation has also a service between Montevideo and the Brazilian State of Matto Grosso, touching at Buenos Ayres, Rosario, Asuncion, Corumba, and Cuyuba. The condition of this line leaves a great deal to be desired as to passenger accommodations.

Lamport & Holt Line.—This corporation has now a direct steamer line between New York and the River Plate, principally a freight line; passenger accommodations rather poor.

Freight rates vary between Europe and the River Plate, from \$10 to \$25 per ton; between River Plate and Rio de Janeiro, at present, \$5; River Plate and Bahia, \$7; and Pernambuco, \$9, per ton of 2,204.6 pounds.

RIVER NAVIGATION.

There is very good service between Montevideo and Buenos Ayres, and also to points farther up the rivers, supplied by the following corporations and private enterprises:

(1) *La Platense Company, Limited* (in liquidation).—Montevideo to Buenos Ayres, and also to Asuncion and Corrientes; steamers, *Venus, Eolo, San Martin, Olimpo, Minerva, Posodas, and Lucero*.

(2) *Mensajerías Fluviales de la Plata*.—Steamers: *Helios, Montevideo, Labrador*; between Montevideo, Buenos Ayres, Paysandu, and Salto.

(3) *Compañía Argentina de Navegacion á Vapor, "Animo et fide."*—Steamers *Rivadavia* and *Comercio*.

(4) *Golondrina I.*—Captain Piaggio, owner; passenger rates between Montevideo and Buenos Ayres, first class, \$4 to \$6; steerage, \$1 (one night's trip, with food); freight, \$2 per ton; rates to the other river points variable.

RAILWAYS.

There are at present six railways in regular working order in Uruguay, with 1,567 kilometers (973.7 miles) under construction, and 1,231 kilometers (764.9 miles) more under survey.

Ferrocarril Central del Uruguay.—This, an English corporation, limited, is the principal railroad in Uruguay. The line runs from Montevideo through the whole of the territory of the Republic to the capital of the Department of Rivera, situated on the Brazilian line, opposite the Brazilian town of Santa Ana do Livramento, 375 kilometers (233 miles), besides a branch line to San Jose, 32 kilometers (19.88 miles).

Nordeste del Uruguay.—This line runs from Montevideo to Minas, 122 kilometers (75.8 miles), and is controlled by the Ferrocarril Central.

Extension Este.—This road runs from the station Toledo, on the Nordeste line, to Nico Perez, 206 kilometers (128 miles), and is also controlled by the Ferrocarril Central.

Noroeste del Uruguay.—This line runs from Salto, through the Departments of Salto and Artigas, to Cuareim (Paso del Correo), where connection is made with the Brazilian line at Uruguayana, 178 kilometers (111 miles).

Midland Uruguay.—Connecting the Central with the Noroeste, from Paso de los Toros to Salto, touching the City of Paysandu, 317 kilometers (111 miles).

Norte del Uruguay.—This road runs from the station Isla Cabellos, on the Noroeste road, through the department of Artigas, to San Eugenio, its capital, situated on the Cuareim River, opposite the Brazilian town of San Juan Bautista, 114 kilometers (70.8 miles).

Del Norte.—The Del Norte runs from Montevideo to the bar of the Santa Lucia River, where the city slaughterhouses are located, 23 kilometers (14.29 miles). This line has the monopoly for bringing the meat to Montevideo for city consumption.

The railways of Uruguay are all single-track lines. They are owned by English corporations, who spend as little as possible on them, and try to make as much as possible out of them. Passenger rates, as well as freight rates, are excessively high, and, consequently, the development of the resources of the country, instead of being furthered by railways, is rather impeded by them.

HIGHWAYS.

The roads in Uruguay are in a very bad condition. Wagons are not used for hauling, however, all this being done in antiquated high-wheeled carts. There are no public roads in Uruguay worthy to be called highways.

EDGAR SCHRAMM,
Consul.

MONTEVIDEO, *December 10, 1894.*

ARGENTINE REPUBLIC.

OCEAN LINES.

In the first category mentioned in the circular, I am at a loss to know if the great intercontinental lines of steamships plying between foreign ports and the Argentine Republic are intended to be included. If so, I can only say that all these "ocean lines" are owned abroad, and that detailed information in regard to them can only be obtained from the home offices in other countries. Only agencies of these various lines

are located here, and the representatives can not or will not give any data concerning either passenger or freight traffic from the home ports in this direction. Still, it may be of some interest to name the more important of these "ocean lines," to the extent at least of "supplying American merchants, travelers, and students" with the information necessary to enable them, from any given port, to reach the River Plate.

Royal Steam Packet Company (English).—Two steamers monthly each way between Buenos Ayres and Southampton, calling at Brazilian and Spanish ports, and with mails, specie, and cargo to all these ports. The voyage each way occupies about twenty-five days. Single and return tickets granted. The steamers are from 3,500 to 5,000 tons register, and in every way well equipped for the service.

Pacific Steam Navigation Company (English).—These steamers leave Liverpool twice a month for Valparaiso, touching at Bordeaux and Brazilian ports, Montevideo, and thence a special service by river boats to Buenos Ayres. Returning from the Pacific, they touch at Montevideo, Brazilian, and Spanish ports. Through tickets are granted to New York, via the Cunard line from Liverpool. The steamers are from 3,500 to 4,500 tons register. During the yellow fever season in Brazil every alternate steamer leaves direct for the River Plate.

Lampart & Holt Line (English).—The passenger steamers of this line no longer come to the River Plate, but make their voyages between Liverpool or Antwerp and Rio Janeiro; and between New York and Rio Janeiro twice a month. The freight steamers, a large fleet of them, receive cargoes to and from all European ports and Buenos Ayres; these steamers generally have accommodation for a few first-class passengers.

Besides these old established English lines, there have been placed on the route between English or continental ports and the River Plate, within the last few years, several cargo lines of steamers, the most important of which are the following, viz, the MacIver Line, the MacAndrew Line, the Nelson Line, the Prince Line, the Houlder Line, the River Plate Meat Company's Line, the Holland Line, the Houston Line, and the Allan Line. The most of the steamers of these lines are prepared to take a few first-class passengers.

Chargeurs Réunis Company (French).—These steamers leave Dunkirk and Havre for the River Plate, and vice versa, twice a month, touching at Spanish ports coming and at Brazilian ports returning. They are of 3,000 tons register and have excellent accommodations for passengers.

Company of the Messageries Maritimes (French).—This line of steamers runs between Bordeaux and Buenos Ayres twice a month. They touch at Spanish ports coming and at Brazilian ports returning. They have first-class appointments for passengers, and sell return tickets at a reduction.

General Steam Transportation Company (French).—The service of this line of steamers (*Société Générale de Transports Maritimes à Vapeur*)

is from Naples, Genoa, Marseilles, Barcelona, Dekar to Buenos Ayres and return, touching at Brazilian ports. They leave each end of the route once a month, and are well fitted for first, second, and third class passengers.

La Veloce Steam Navigation Company (Italian).—The steamers sail twice a month from Naples, Genoa, and other Italian ports to the River Plate, touching at Marseilles, Barcelona, etc., on the passage out, and at Brazilian ports returning. They have from 4,000 to 5,000 tons register, and are, in every respect, splendid steamers, swift and admirably equipped.

General Italian Steam Navigation (United Florio and Rubattino) Company.—These steamers ply between Genoa and Buenos Ayres and the principal intermediate ports twice a month. They are all large and handsome steamers, with excellent accommodations for first and third class passengers.

Italian Navigation Company.—The steamers of this line make bi-monthly passages between Genoa and the River Plate, touching at all important intermediate ports in France, Spain, and Brazil.

Imperial North German Lloyds Company.—This line plies between Antwerp and Buenos Ayres, touching at Southampton, Bremen, Vigo, etc., without calling at any Brazilian ports. The steamers are new, well equipped, and swift. Their sailings at each end of the line are bimonthly.

The Bremen and La Plata (Hansa) Company.—These steamers have regular fortnightly sailings between Antwerp and Buenos Ayres, calling at Antwerp, Hamburg, Rotterdam, and other ports when required. They are freight boats, but have accommodations for a few passengers.

Hamburg-South American Steamship Company.—This is called the "regular German mail line," and its steamers sail between Hamburg and the River Plate and all important intermediate ports, receiving cargo for Bremen and ports of Denmark, Sweden, and Norway, and on the homeward passage calling at Rio Janeiro, Bahia, and other Brazilian ports; they make bimonthly passages.

The Kosmos Steamship Company.—These steamers sail twice a month between Hamburg and Antwerp and the River Plate, one steamer going to Valparaiso, on the west coast, monthly.

The Norton Line.—The steamers of this line are chartered steamers under the British flag (Norton & Son, New York; Bucknell Nephews, London). They make direct passages from New York to Montevideo and Buenos Ayres, without touching at Brazilian ports. Returning from the River Plate they call at Rio Janeiro. They have ample accommodations for cargo, and are well equipped for a limited number of first-class passengers. They make bimonthly passages each way.

Knott's Prince Line.—This line, besides its steamers between the River Plate and the European continent, has a special service between the River Plate and New York, a steamer sailing from each end every two weeks. They are cargo boats, but have accommodations for a

limited number of passengers. They call on the northward route at Santos, Rio Janeiro, Bahia, and Pernambuco.

Lamport & Holt Line.—Once a month there is a freight steamer of this company leaving the River Plate for New York, and one from New York direct for Buenos Ayres, with accommodations for a few passengers.

Passage rates.—The rates for passage vary somewhat on these different lines according to the rank of the steamers and any special accommodations they may offer. Those of the Royal Mail Company, between Southampton and Buenos Ayres, are from £30 to £35 (\$145.98 to \$170.31) for first-class passengers; and £20 (\$90.32) for second class. Those of the Pacific Navigation Company, between Liverpool and Buenos Ayres, are a trifle less. The rates of the French line, Messageries Maritimes, are 750 francs (\$144.75) for first class, 350 francs (\$67.55) for second class, and 150 francs (\$28.95) for third class, between Bordeaux and Buenos Ayres; of the Chargeurs Réunis, the rates are \$150 for first class, \$70 for second class, and \$30 for third class, between Havre and Buenos Ayres. The rates by the German lines are \$150 to \$175, between German ports and Buenos Ayres for first-class passages. Between Italian ports and the River Plate, the rates by the Italian lines are about the same. The rates between New York and Buenos Ayres, by the Norton Line, are \$160 for first class and \$60 for second class passengers; and by the Prince Line the passages are about the same figures.

Freight.—In regard to the number of vessels employed by each of these several lines, or owned by the respective companies, I am not able to say, and the information had better be sought from the home offices in Europe. The number of passenger steamers, however, of the different companies is amply sufficient at all times for the service they perform. As to the freight steamers, the companies in most cases not only trade with the River Plate, but do a general cargo business in Atlantic waters, and have such large fleets that they can, by cable, at any time place additional vessels wherever they may be needed. In the matter of cargo, either from Europe or from the United States to the River Plate, there are no regular or uniform rates. The amount of cargo offering in this direction is just now so limited in amount, compared with the tonnage offered, that the companies accept what they can get. And this is also the case with freights from the Argentine Republic. There is always so much steam tonnage offered at this end of the several lines, that the companies can not be said to have any fixed rates. Indeed, cargo steamers have, in many instances lately, adopted the custom of sailing vessels, and are now content to get "lump sums."

COASTWISE LINES.

In regard to "great coastwise lines" of steamers, there is but very little to be said. Along the great stretch of coast from Buenos Ayres down the Atlantic, there is no regular service of steamers. The Argen-

tine Government, however, has arranged for a naval transport, or a chartered steamer to leave here once a month with supplies and provisions for the various sub-prefecturas or custom-house stations of Patagonia and Tierra del Fuego, touching at Bahia Blanca, Carmen de Patagones, Port Desire, Chupat, Rio Santa Cruz, States Island, and Ushuina. Now and then, private steamers, carrying cargo and passengers, make return trips to those outlying ports of Argentine civilization, but it can not yet be stated that there is any regular line. Rates of freight and passage are, of course, conventional.

RIVER STEAMERS.

There are several regular river lines of steamers, which ply between Montevideo and Buenos Ayres, making daily trips, leaving each port in the afternoon and reaching the other in the early morning. In this service, the boats are Clyde built, quite commodious, and fitted up with all the latest conveniences and improvements, in these respects corresponding to our own coast line steamers.

There are likewise regular steamers running three times a week up the Parana River between Buenos Ayres and Asuncion, Paraguay, and between Buenos Ayres and Salto on the Uruguay River, touching at all intermediate ports. These river boats generally offer good accommodations.

There can not be said to be any fixed and uniform rates for freight on these river boats. They charge what they can get. The price of a first-class passage between Buenos Ayres and Montevideo is \$6 (gold); second class, \$4. The price of a first-class passage to Asuncion is \$50; for round trip, \$80. The price of a first-class passage to Salto is \$8; for the round trip, \$14. Freights to Montevideo per ton are \$2; to Salto, \$3, and to Asuncion, \$4.50 (gold) per ton.

RAILWAYS.

So far as "great through lines of railways" are concerned, I have to premise that there is really nothing in the Argentine Republic which can be so designated. There are a number of well-equipped railways running out of Buenos Ayres, and also a number running out of Rosario, whose tracks or whose connections with other roads extend into the interior of the country, but none of them go "through." They all stop somewhere, as we say, "in the woods," and hence none of them can be considered as "great highways of traffic and travel." The nearest approaches, however, which this country has to through lines are the following:

Buenos Ayres, Rosario and Tucuman Route.—As the connecting points of this route indicate, it runs northward direct, about 1,000 miles, taking in a number of important towns on the way, but it stops at Tucuman. Beyond the latter place the Government is constructing a narrow-gauge road to Salta and Jujuy. The line is really composed of

three different roads, each one of which has its own distinct arrangements for passengers and for traffic, though all cars go through without change or break. The companies are all in private hands, whose headquarters are in London. The fare to Tucuman, first class, is \$65; second class, \$37.45 (currency).

Eastern Argentine Route to Tucuman.—This line starts also at Buenos Ayres, taking in Rosario, whence it runs northwestward to Cordoba, and thence on to Tucuman. From Cordoba, however, the track is narrow guage, so that all freights have to be rehandled at that point. The line is composed, also, of at least three different managements. The length of the route is nearly 1,200 miles, but there are no combination rates, each road exacting its own schedule for both freight and passage.

*Buenos Ayres and Pacific.*¹—The line thus designated, owned by a private English company, has its road open to business as far as Mendoza, though it is nearly ready to be opened for about 50 kilometers beyond, toward the frontier of Chile. It has a section also in operation from Mendoza to San Juan. Through passengers to Chile cross the mountains by the Uspallata Pass on muleback, the road being open during the summer months. The distance to Mendoza is about 600 miles, but no through freights are taken. The only trade, however, at present, is in horses, mules, and cattle, which go across on the hoof. The fare to Mendoza, first class, is \$57.40; second class, \$35.70 (currency). The present length of the road is 685 kilometers (425.6 miles).

Buenos Ayres and Great Western.—This line was formerly the property of the Province of Buenos Ayres, but has lately been sold to a private English company. The road now has an extension into the western pampa as far as Trenqua Lanquen, a small town of no importance, except that it is the present terminus of the road. The present

¹This road is also known as the Transandine. Minister Strobel, in a dispatch to the Department from Santiago, Chile, dated February 21, 1895 (printed in Consular Reports, May, 1895, p. 181), says:

“Before the adjournment of the Chilean Congress, on the 9th instant, a law was passed which guarantees, for twenty years, to the Transandine Railway Company interest at the rate of 4½ per cent per annum on a capital £1,300,000. The English capitalists with whom the holders of the concession (Messrs. Clark Bros., resident in this country) have been negotiating, in order to raise the amount required to complete the road, have been demanding, for some time past, a guaranty of 5 per cent, but the Chilean Congress would not go beyond the rate mentioned of 4½ per cent. As work is being continued on the Argentine side, the hope is generally entertained here that, with the passage of this law, sufficient capital will be obtained for the completion of the entire road by both countries within a few years. The uncompleted portion, however, comprises the most difficult part of the road, and will require almost continual tunneling. The line on the Argentine side is finished as far as Punta de Vacas, and on the Chilean side as far as Salto del Soldado. This leaves at present unfinished about 75 kilometers (46.6 miles), almost equally divided between the two Republics, this distance being at present traversed in seventeen hours—twelve by coach and five on muleback—the whole trip from Valparaiso to Buenos Ayres occupying four days. When the line is finished, it is expected that the journey will be reduced to seventy-two hours.”

length of the road is 513 kilometers (318.7 miles). The fare to Trenqua Lanquen, first class, is \$21.50; second class, \$14.50 (currency).

Buenos Ayres and Southern.—This road, with its lateral branches, exceeds in length any other road in the country. It is all under a single management, and is owned by an English company whose chief office is in London. From Buenos Ayres it has a double-track trunk line to Altamirana, where it divides into two roads to Bahia Blanca; one passing through Chascomus, Dolores, Maipa, and Tandil, with branches to Mar del Plata and to Necochea, two watering places on the Atlantic coast, and the other passing through Canuelas, Las Flores, Azul, etc. The freight traffic on both these lines is entirely local. The fare to Bahia Blanca, first class, is \$27.80; second class, \$19.20 (currency).

These are the only roads in the Argentine Republic which can be dignified into the category of "through roads." In regard to freights upon any of them, each road has its own tariff, in currency, which changes as the premium in gold goes up or down. As for combination rates, the thing is unknown in this country. Each company exacts freight according to its own tariff. Thus far, the National Government has not intervened to regulate "interstate commerce," i. e., traffic between the different Argentine Provinces, and the point has been raised that there is nothing in the constitution which permits the General Government to interfere in the regulation of interstate passenger and traffic rates.

There are no canals in the Argentine Republic.

E. L. BAKER,
Consul.

BUENOS AYRES, *October 11, 1894.*

EUROPE.

GREAT BRITAIN.

RAILWAY SYSTEM OF ENGLAND.¹

Railways had their origin in the tramways which were laid more than two hundred years ago in the mineral districts of England for the conveyance of coal to the sea.

In those days, before Macadam, roads bearing heavy traffic were with difficulty kept in repair. This led to the plan of laying planks or timbers at the bottom of the ruts as a better contrivance than filling in with stones, and then to laying rails of timber on the level surface. In 1676, tramways consisted of rails and timber laid "from the colliery to the river, exactly straight and parallel, and bulky carts were made with four rollers fitting the rails, whereby the carriage was so easy that one horse could draw 4 or 5 chaldrons of coals." Cast iron was first tried incidentally as a material for rails in 1767 by the Coalbrookdale Iron Company. The iron rails were cast in lengths of 5 feet, 4 inches wide and 1½ inches thick, with three holes, through which they were fastened to the oak rails.

The tramway was developed into the railway by the employment of cast-iron flange rails to replace the wooden rails; the continuous flange or ledge on their inner edge kept the wheels on the track. The roads were then called tramroads, probably as an abbreviation of trammel roads, the flanges of the rails being in reality trammels to gauge the road and confine the wheels to the track.

The benefits derived from the use of the tramway or railway for the transport of coal suggested to reflective persons the employment for it for the conveyance of general merchandise and of passengers.

For the conveyance of heavy merchandise inland, the canals, a little more than sixty years ago, furnished the principal means. Though there were three such water routes between Liverpool and Manchester, they were sometimes so crowded that cotton took a month to pass from the seaport to the manufacturing towns in the interior; yet the whole of the merchandise passing between Liverpool and Manchester did not average more than 1,200 tons a day. The average rate for car-

¹Authorities: D. K. Clark, C. E.; Prof. A. T. Hadley, S. W. Dunning, and others.

riage was 18s. (\$4.38) per ton, and the average time of transit on the 50 miles of canal was thirty-six hours.

The conveyance of passengers by the improved coach roads was comparatively rapid, but it was very costly. The first great movement to mend this state of things was the passing of the act of 1821 for the construction of the Stockton and Darlington Railway. By another act, applied for at the request of George Stephenson, who became the engineer to the line, the company was empowered to work the railway with locomotive engines.

The line, with three branches, was over 38 miles in length, and was at first laid as a single line, with passing places at intervals of a quarter of a mile, the way being constructed with wrought-iron fish-belly rails weighing 28 pounds per yard. It was opened in September, 1825, by a train of thirty-four vehicles, making a gross load of about 90 tons, drawn by one engine driven by Stephenson, with a signalman on horseback in advance. The train moved off at the rate of from 10 to 12 miles an hour, and attained a speed of 15 miles per hour on favorable parts of the line.

A train weighing 92 tons could be drawn by one engine at the rate of 5 miles per hour. The principal business of this new railway was the conveyance of minerals and goods; but from the first, passengers insisted upon being carried, and in October, 1825, the company began to run a daily coach called the "Experiment," to carry six inside and from fifteen to twenty outside, making the journey from Darlington to Stockton and back in two hours. The fare was 24 cents, and each passenger was allowed to take baggage not exceeding 14 pounds weight. The rate for carriage of merchandise was reduced from 10 cents to about three-eighths of a cent per ton per mile, and that of minerals from 14 cents to 3 cents per ton per mile. The price of coals at Darlington fell from 18s. (\$4.38) to 8s. 6d. (\$2.06) per ton.

The Monklands Railway in Scotland, opened in 1826, was the first to follow the example of the Stockton and Darlington line, and several other small lines, including the Canterbury and Whitstable, worked partly by fixed engines and partly by locomotives, quickly adopted steam traction. But the inauguration of the Liverpool and Manchester Railway, opened in 1829, made the first great impression on the national mind that a revolution in the modes of traveling had really taken place.

While retaining their original title of "railway" companies, the great British corporations do much more than provide highways, locomotive power, and rolling stock for rail carriage.

The railway companies of the United Kingdom own nearly 21,000 miles of line (more than one-half of which consists of two or more tracks), over 18,000 engines, and about 654,700 vehicles of all kinds. In goods traffic, they collect, deliver, load, unload, warehouse, and insure freight, owning for these purposes an enormous apparatus of warehouses, cranes, vans, luries, horses, stables, etc.

For passengers, they provide conveniences of all sorts en route and at stations. To facilitate transport, and to compete more successfully with one another, they have acquired and work steamboats, canals, dock and road coaches. They are manufacturers on a large scale of engines, vehicles, rails, signal appliances, etc., for their own use. They own and work electric-lighting, oil-gas, and printing works. On them depend the most typical modern institutions—the cheap postal and telegraph service and the daily press. Still, the transportation of passengers and goods remains the *raison d'être* of railways and the main source of revenue. Freight traffic is the more important, bringing in \$199,500,400 in 1893, as against \$174,461,343 from passengers, and \$18,433,357 from rents, canals, steamboats, etc. How well the United Kingdom is served by its railway companies, may be gathered from the fact that in England, in 1892, the total train movement was 22½ trains each way every day over every mile of railway, which is three times as many as in the United States.

As they depend mainly on one or other of the above-named sources of revenue, the thirty-one principal railways of the United Kingdom can be best classified thus:

The Southeastern, London, Chatham and Dover, London, Brighton and South Coast, and the Southwestern may be called passenger lines, as each receives over \$14,600 per mile per annum from that source and under \$9,733 from goods.

The Northeastern, Manchester, Sheffield and Lincolnshire, North Stafford, Caledonian and North British are "goods" lines, receiving over \$9,733 per mile from freight traffic, and under that amount from passengers. The London and Northwestern, Great Northern, and the Midland each earn about \$17,032 from goods traffic, and over \$9,733 from passengers; these are generally called the "heavy" lines.

The Lancashire and Yorkshire Railway (of which I give a detailed report below), alone receives over \$14,600 per mile from both classes, its system lying among many large towns. In total receipts per mile per annum, the Lancashire and Yorkshire easily leads with \$41,364; the Midland, London and Northwestern, Great Northern, London, Brighton and South Coast, London, Chatham and Dover, and the Manchester, Sheffield and Lincolnshire all earning over \$29,198. On the other hand, the Great Western does not get \$19,466 per mile altogether, and the Great Eastern barely exceeds that figure.

By virtue of its services to Scotland, Wales, and Ireland, and to Liverpool (for the United States), the London and Northwestern is the most important as it is the richest of the British railways (length, 1,888½ miles). The Great Western is the longest (2,482 miles); the Great Northern has the best reputation for speed, and the Midland serves the greater number of important towns, and is incomparably the best managed and most carefully conducted road in Great Britain.

Nearly sixty years ago, Porter, in his "Progress of the Nation: 1836," estimated that in Great Britain 82,000 persons daily, or 30,000,000 per annum, traveled by coach an average distance of about 12 miles each, at an average cost of \$1.22 each passenger, or 10 cents per mile; whereas in 1893, over 873,000,000 separate passenger journeys were taken on the railways of the United Kingdom, being 23 for each man, woman, and child of the population (to this number should be added, perhaps, 450,000,000 journeys taken with season or periodical tickets), the average fare being, according to a high authority, about 3 farthings (1½ cents) per mile.

Ninety per cent of ordinary travel in this country is now in the third class; and in 1893 first-class travel declined 3.4 per cent in numbers and 3 per cent in receipts, and second class 8.4 per cent in numbers and 13.7 per cent in receipts. Meanwhile, third-class travel increased 1.4 per cent in numbers and 1.8 per cent in receipts.

Of the thirty-one principal lines of railway in the United Kingdom, only two have their headquarters in the city of Manchester. They are the Lancashire and Yorkshire Railway, and the Manchester, Sheffield and Lincolnshire Railway.

LANCASHIRE AND YORKSHIRE RAILWAY.

The Lancashire and Yorkshire Railway has its termini at Liverpool in the west, Hull in the east, Bradford and Leeds in the north, and Doncaster in the south.

This company owns 485 miles of track, and leases or rents another 42 miles, making a total of 527 miles.

The following table gives the main stations on this line of railway, with the distances and the fares for first-class passengers, between Manchester and those stations. Third-class fares are about half the first class:

Manchester to—	First-class fare.		Dis- tance	Manchester to—	First-class fare.		Dis- tance.
	English rate.	United States equiv- alent.			English rate.	United States equiv- alent.	
	<i>s.</i>	<i>d.</i>	<i>Miles.</i>		<i>s.</i>	<i>d.</i>	<i>Miles.</i>
Accrington	3	7	22½	Holmfirth	5	3	45½
Bacup	3	4	.81	Huddersfield	5	0	1.21
Blackburn	4	6	1.09	Hull	12	3	2.98
Blackpool	6	0	1.46	Leeds	7	0	1.70
Bolton	2	0	.48	Liverpool	5	8	1.33
Bury	1	6	.36	Lytham	6	0	1.46
Bradford	6	3	1.52	Middleton	0	10	.20
Burnley	4	7	1.11	Oldham	1	0	.24
Chorley	4	0	.97	Preston	5	8	1.33
Clitheroe	6	3	1.52	Rochdale	1	10	.44
Colne	5	6	1.33	St. Annes	6	0	1.46
Darwen	3	8	.89	Southport	5	0	1.21
Doncaster	8	10	2.14	Todmorden	3	4	.81
Fleetwood	6	0	1.46	Wakefield	6	9	1.64
Goole	9	3	2.25	Wigan	2	9	.66
Halifax	5	3	1.27				18

The condition of the line is, like that of all the leading railways in the Kingdom, good throughout. The line varies in places from one track to three. The communication upon the greater part of the line is almost incessant.

MANCHESTER, SHEFFIELD AND LINCOLNSHIRE RAILWAY.

This railway, with its central terminus in Manchester, runs as far as Liverpool in the west, Grimsby in the east, Wakefield in the north, and Lincoln and Annesley in the south, covering 350 miles of track, and 207½ miles in conjunction with other railways, making a total of 557½ miles. This company is now extending its line from Annesley—its lower southern point—to London, at an estimated cost of \$282,257 per mile, the 4½ miles within the London area working out at no less than \$2,638,382 each mile.

The following table shows the distances between Manchester and the principal points along the line, together with the fare for first-class passengers:

Manchester to—	First-class fare.		Dis- tance.	Manchester to—	First-class fare.		Dis- tance.
	English rate.	United States equiva- lent.			English rate.	United States equiva- lent.	
	<i>s.</i>	<i>d.</i>	<i>Miles.</i>		<i>s.</i>	<i>d.</i>	<i>Miles.</i>
Barnsley	4	9	36	Macclesfield(C.L.C.)	3	0	19½
Chester (C. L. C.).....	6	0	38½	Pen'stone.....	3	10	28½
Chesterfield	7	4	α60	Retford.....	8	7	64½
Doucaster	6	10	52½	Rotherham	5	11	47
Grimsby	12	3	109½	Sheffield.....	5	7	41½
Grimsby Docks.....	12	3	110½	Southport	5	0	49½
Liverpool (C. L. C.)...	5	6	84	Warrington.....	2	9	15½
Lincoln	11	1	84	Wakefield	6	9	51½

α About.

The condition of the line is good throughout; the tracks vary from one to three, and the communication is almost incessant.

RAILWAY CARRIAGES AND WAGONS.

The common varieties of vehicles employed in railway traffic are:

(1) Passenger train stock: First-class carriage, second-class carriage, third-class carriage, composite carriage, luggage brake van, horse box, and carriage truck. To these, may be added the mail carriage or traveling post-office.

(2) Goods train stock: Platform wagon, open or box wagon, high-sided round-end wagon, covered goods wagon, cattle wagon, sheep wagon, coal wagon, coke wagon, and brake van.

Passenger carriages.—The early first-class carriages weighed 3½ tons, the bodies or upper parts being 15 feet long, 6½ feet wide, and 4 feet 9 inches high, divided into three compartments to hold six passengers each, or eighteen in all. They now weigh from 8 to 13 tons each, and

are from 20 to 30 feet in length and 8 to 8½ feet wide. Carriages have, until recent years, been placed almost all on four wheels, but six wheels on three axles are now generally in use. A modern first-class carriage 28 to 30 feet long, with four compartments, gives 7 to 7½ feet of total length for each compartment, as against 5 feet in the early carriages. Second and third class carriages, in length from 28 to 31 feet, are divided into five compartments, each from 5 feet 7 to 6 feet 2 inches long.

Second-class carriages, originally, were destitute of cushioning, hard and square, on the nearly obsolete policy of making them uncomfortable in the hope of inducing passengers to travel first class. The London, Brighton and South Coast Railway Company in 1857-58 was the first to supply comfortably padded seats in its second-class carriages, and the receipts of that company were in 1858 materially augmented in consequence. Third-class carriages have been improved under the stimulating example of the Midland Railway Company, which abandoned its second-class carriages and raised its third-class stock to an equality with the second-class vehicles of other lines.

First-class compartments are constructed to seat six persons, three on each side; third-class compartments seat ten persons, five on each side. A uniform width of 8 feet outside, or 7½ inside, is adopted for all carriages, and, as a rule, first-class compartments are 7½ feet long between the partitions, and third-class 6 feet long. The roof is 7 feet 4 inches above the floor in the center, and the clear height of the doorway is 6 feet. The wheels are 3 feet 7 inches in diameter. Every first-class passenger on the best lines now has about 90 cubic feet of space allowed him (the Great Western Railway gives over 95 cubic feet), as against 26 cubic feet a generation ago.

Pullman cars were first imported from the United States by the Midland Railway Company in 1874 (the Midland own upward of thirty-four of these, some being sleeping cars, but the majority drawing-room and dining cars; they cost \$13,139.55 each), and they have also been adopted by the Brighton, Great Northern, and the Southwestern systems. As a rule, a small extra charge is made, for sleeping berths only. Dining cars are in use on the Midland, Great Northern, London and Northwestern, and Great Eastern lines.

In the lighting and heating of cars, great improvements have been made, the Pope system of oil-gas lighting having been adopted on many lines, and the old-fashioned foot warmer superseded by a system of heating by steam from the locomotive.

RATES OF FREIGHT.

Ever since railways were in the United Kingdom, the principle has obtained that Parliament should fix the maximum tolls and fares for any traffic passing over the line. In 1854, the first railway and canal traffic act was passed, followed by a second in 1873, and a third in 1888.

Under the act of 1888, a permanent railway commission was appointed, to hold sittings in England, Scotland, and Ireland, with a judge of each country as its ex officio president, and two special members, one experienced in railway business, each having a salary of \$14,600 a year. Below, I give the classification of merchandise in alphabetical order, together with the maximum rates and charges according to the "railway rates and charges order confirmation acts of 1891 and 1892," of the two railways whose centers are in this consular district, viz, the Manchester, Sheffield and Lincolnshire Railway and the Lancashire and Yorkshire Railway.

The following schedule of maximum rates and charges is divided into six parts:

Part I contains the maximum rates and charges authorized in respect of the merchandise comprised in the several classes of merchandise specified in the classification.

Parts II and III contain the maximum rates and charges authorized in respect of animals and carriages as therein described.

Part IV specifies the exceptional charges mentioned in such part, and the circumstances in which they may be made.

Part V contains the rates and charges authorized in respect of perishable merchandise by passenger train, with the provisions and regulations which apply to such merchandise.

Part VI contains the rates and charges authorized in respect of small parcels by merchandise train, with the provisions and regulations which are to apply to such parcels.

PART I.—GOODS AND MINERALS.

MANCHESTER, SHEFFIELD AND LINCOLNSHIRE RAILWAY, ETC.

Railway rates and charges applicable to the following railways and railway companies:

The Manchester, Sheffield and Lincolnshire Railway Company.

The Liverpool, Southport and Preston Junction Railway Company.

The Macclesfield Committee.

The Manchester, Sheffield and Lincolnshire and the Great Northern Railway companies, in respect of the West Riding and Grimsby Railway.

The Manchester, Sheffield and Lincolnshire, the Great Northern, and the Midland Railway companies, in respect of the Cheshire Lines railways.

The Manchester, Sheffield and Lincolnshire, the Great Northern, the Midland, and the Southport and Cheshire Lines Extension Railway companies, in respect of the Southport and Cheshire Lines Extension Railway.

The Manchester, Sheffield and Lincolnshire and the London and Northwestern Railway companies, in respect of the Manchester South Junction and Altrincham Railway.

The Manchester, Sheffield and Lincolnshire and the London and Northwestern Railway companies, in respect of the Oldham, Ashton, and Guide Bridge Junction Railway.

The Manchester, Sheffield and Lincolnshire and the Midland Railway companies, in respect of the Sheffield and Midland Committee lines.

The Wigan Junction Railway Company.

SCALE I.—Maximum rate for conveyance, per ton per mile, 1.25d (2½ cents). Applicable to the Oldham, Ashton and Guide Bridge Junction Railway, in respect of merchandise in Class A.

SCALE II.—Maximum rates for conveyance, per ton per mile, for consignments, except as otherwise provided in the schedule, in respect of merchandise comprised in the under-mentioned classes. Applicable to the Maccolesfield Committee in respect of merchandise in Classes A and B.

Class.	First 20 miles, or under.		Next 30 miles, or under.		Next 50 miles, or under.		Remainder of the distance.	
	Pence.	Cents.	Pence.	Cents.	Pence.	Cents.	Pence.	Cents.
A	1.15	2½	0.90	1½	0.45	½	0.40	½
B	1.25	2½	1	2	.80	1½	.50	1

SCALE III.—Maximum rates for conveyance, per ton per mile, for consignments, except as otherwise provided in the schedule, in respect of merchandise comprised in the under-mentioned classes. Applicable as hereinbefore specially mentioned.

Class.	First 20 miles, or under.		Next 30 miles, or under.		Next 50 miles, or under.		Remainder of the distance.	
	Pence.	Cents.	Pence.	Cents.	Pence.	Cents.	Pence.	Cents.
A	1	2	0.85	1½	0.50	1	0.40	½
B	1.40	2½	1	2	.80	1½	.50	1
C	1.80	3½	1.50	3	1.20	2½	.70	1½
1	2.20	4½	1.85	3½	1.40	2½	1	2
2	2.65	5½	2.30	4½	1.80	3½	1.50	3
3	3.10	6½	2.65	5½	2	4	1.80	3½
4	3.60	7½	3.15	6½	2.50	5	2.20	4½
5	4.30	8½	3.70	7½	3.25	6½	2.50	5

LANCASHIRE AND YORKSHIRE RAILWAY, ETC.

SCALE I.—Maximum rates for conveyance, per ton per mile, for consignments, except as otherwise provided in the schedule, in respect of merchandise comprised in the under-mentioned classes. Applicable to such railways as are not hereinafter specially mentioned.

Class.	First 20 miles, or under.		Next 30 miles, or under.		Next 50 miles, or under.		Remainder of the distance.	
	Pence.	Cents.	Pence.	Cents.	Pence.	Cents.	Pence.	Cents.
A	1	2	0.85	1½	0.50	1	0.40	½
B	1.40	2½	1	2	.80	1½	.50	1
C	1.80	3½	1.50	3	1.20	2½	.70	1½
1	2.20	4½	1.85	3½	1.40	2½	1	2
2	2.65	5½	2.30	4½	1.80	3½	1.50	3
3	3.10	6½	2.65	5½	2	4	1.80	3½
4	3.60	7½	3.15	6½	2.50	5	2.20	4½
5	4.30	8½	3.70	7½	3.25	6½	2.50	5

SCALE II.—Maximum rates for conveyance, per ton per mile, for consignments, except as otherwise provided in the schedule, in respect of merchandise comprised in the under-mentioned classes. Applicable to the Preston and Longridge Railway.

Class.	Pence.	Cents.	Class.	Pence.	Cents.
A	1.25	2½	2	2.65	5½
B	1.40	2½	3	3.10	6½
C	1.80	3½	4	3.60	7½
1	2.80	4½	5	4.30	8½

Provided always, that with respect of merchandise in Class A, conveyed between Dock street, Preston, and Deepdale the maximum rate for conveyance shall not exceed 2d. (4 cents) per ton.

MAXIMUM STATION AND SERVICE TERMINALS.

The following terminals are common to all the railway rates and charges orders confirmation acts of 1891 and 1892, except as hereunder mentioned, in respect of merchandise comprised in the under-mentioned classes.

[Per ton.]

Class.	Maximum terminals.				
	Station terminal at each end.	Service terminals.			
		Loading.	Unloading.	Covering.	Uncovering.
	s. d.	s. d.	s. d.	d.	d.
A.....	0 3				
B.....	0 6				
C.....	1 0	0 3	0 3	1	1
1.....	1 6	0 5	0 5	1½	1½
2.....	1 6	0 8	0 8	2	2
3.....	1 6	1 0	1 0	2	2
4.....	1 6	1 4	1 4	3	3
5.....	1 6	1 8	1 8	4	4

PART II.—ANIMAL CLASS.

The following scale is common to all the railway rates and charges orders confirmation acts of 1891 and 1892, with the exception of the Scottish railways acts and the Irish railways act:

[English money and United States equivalents.]

Description.	Rate for conveyance per mile.								Station terminal at each end.				Service terminals.				Minimum total charge per consignment.
	First 20 miles, or under.		Next 30 miles, or under.		Next 50 miles, or under.		Remainder of the distance.		Loading.		Unloading.		Covering.		Uncovering.		
	d.	cts.	d.	cts.	d.	cts.	d.	cts.	s.	d.	s.	d.	s.	d.	s.	d.	
For every horse, mule, or other beast of draft or burden.....	3	6 3	6	1.65	3½	1.65	3½	0 6	12	0 4	8	0 4	8	2 6		\$0.60	
For every ox, cow, bull, or head of neat cattle.....	2	4 2	4	1.30	2½	1.30	2½	0 4	8	0 3	6	0 3	6	2 6		.60	
For every calf not exceeding 12 months old, pig, sheep, lamb, or other small animal.....	0.75	1½	0.75	1½	0.40	¾	0.35	¾	0 2	4	0 1.50	3	0 1.50	3	2 6	.60	
For every animal of the several classes above enumerated conveyed in a separate carriage, by direction of the consignor, or from necessity.....	6	12 6	12	6	12	6	12	1 6	36	1 0	24	1 0	24	5 0		1.21	
For each truck containing any consignment by the same person of such number of oxen, cows, neat cattle, calves, sheep, goats, or pigs as may reasonably be carried in a truck of 13 feet 6 inches in length, inside measurement.	6	12 5	10	4.90	9½	4.20	8½	1 0	24	0 6	12	0 6	12	5 0		1.21	

[English money and United States equivalents.]

Description.	Rate for conveyance per mile.								Station terminal at each end.	Service terminals.				Minimum total charge per consignment.
	First 20 miles, or under.		Next 30 miles, or under.		Next 50 miles, or under.		Remainder of the distance.			Loading.		Unloading.		
	d.	cts.	d.	cts.	d.	cts.	d.	cts.		s. d.	cts.	s. d.	cts.		s. d.
For each truck containing any consignment by the same person of such number of oxen, cows, neat cattle, calves, sheep, goats, or pigs as may reasonably be carried in a truck of 15 feet 6 inches in length, inside measurement.	7	14 6	12	5.20	10½	4.50	9	1 0	24 0 9	18 0 9	18	5 0	1.21	
For each truck containing any consignment by the same person of such number of oxen, cows, neat cattle, calves, sheep, goats, or pigs as may reasonably be carried in a truck of 18 feet in length, inside measurement.	8	16 7	14	6.20	12½	5.50	11	1 0	24 1 0	24 1 0	24	5 0	1.21	

The terminal charges other than those payable under paragraph 4 on animals sent by the same person at a rate calculated per head, and carried in the same truck, shall in no case exceed the terminal charges per truck.

Where the company is required to cleanse and does cleanse trucks under the provision of any order in council or duly authorized regulation of any department of state, they may make a charge not exceeding 1 shilling per truck in addition to the charges herein authorized.

PART III.—CARRIAGES.

This part of the maximum rates and charges is common to all the railway rates and charges orders confirmation acts of 1891 and 1892.

[English money and United States equivalents.]

Description.	Rates for conveyance per mile.								Station terminal at each end.	Service terminals.			
	First 20 miles, or under.		Next 30 miles, or under.		Next 50 miles, or under.		Remainder of the distance.			Loading.		Unloading.	
	d.	cts.	d.	cts.	d.	cts.	d.	cts.		s. d.	cts.	s. d.	cts.
For every carriage of whatever description not included in the classification and not being a carriage adapted and used for traveling on the railway, and not weighing more than 1 ton, carried or conveyed on a truck or platform.	6	12	6	12	3.30	6½	3.20	6½	1 0	24	6	12	6 12
For every additional quarter of a ton which such carriage may weigh.	2	4	2	4	1.35	2½	1.25	2½					

For the use of a covered carriage truck for the conveyance of any such carriage an additional charge of 10s. (£2.43).

In the Cleator and Workington Junction Railway, etc., act, the conveyance rates "For the next 50 miles" and "For the remainder of the distance" are omitted.

In the following acts, the East London Railway, etc.; the Festiniog Railway, etc.; the Isle of Wight Railway, etc.; the North London Railway, and the City of Glasgow Union Railway, the rates for conveyance are limited to those set forth in the first column of rates in the above scale.

PART IV.—EXCEPTIONAL CLASS.

This part of the maximum rates and charges is common to all the railway rates and charges orders confirmation acts of 1891 and 1892.

The following articles are subject to such reasonable charge as the company may think fit in each case:

For articles of unusual length, bulk, or weight, or of exceptional bulk in proportion to weight.

For articles requiring an exceptional truck, or more than one truck, or a special train.

For locomotive engines and tenders, and railway vehicles running on their own wheels.

For any wild beast, or any large animal not otherwise provided for.

For dangerous goods.

For specie, bullion, or precious stones.

For any accommodation or services provided or rendered by the company within the scope of their undertaking by the desire of a trader, and in respect of which no provisions are made by this schedule.

The above provisions shall not apply to pieces of timber weighing less than 4 tons each, but for all such timber when requiring two or more wagons for conveyance a minimum charge may be made as for 1 ton for each wagon used, whether carrying part of the load or used as a safety wagon only.

PART V.—PERISHABLE MERCHANDISE BY PASSENGER TRAIN

This part of the maximum rates and charges is common to all the railway rates and charges orders confirmation acts of 1891 and 1892.

The following provisions and regulations shall be applicable to the conveyance of perishable merchandise by passenger train:

1. The company shall afford reasonable facilities for the expeditious conveyance of the articles enumerated in the three divisions set out hereunder (which articles are hereinafter called "perishables"), either by passenger train or by other similar service.

2. Such facilities shall be subject to the reasonable regulations of the company for the convenient and punctual working of their passenger train service, and shall not include any obligation to convey perishables by any particular train.

3. The company shall not be under obligation to convey by passenger train or other similar service any merchandise other than perishables.

4. Any question as to the facilities afforded by the company under these provisions and regulations shall be determined by the board of trade.

5. Where a consignment of milk is less than 12 gallons, the company shall be entitled to charge as for 12 gallons; and where a consignment of perishable merchandise comprised in Divisions II or III is less than 1 hundredweight, the company shall be entitled to charge as for 1 hundredweight, with a minimum charge of 1 shilling.

Division I.—Milk.

Division II.—Butter (fresh), cheese (soft), cream, eggs; fish: char, grayling, lobsters, mullet (red), oysters, prawns, salmon, soles, trout, turbot, whitebait; hothouse fruit, game (dead), meat (fresh), poultry (dead), rabbits (dead), vegetables (hothouse).

Division III.—Fish (except as provided in Division II), fruit (except as provided in Division II), ice.

Maximum rates and charges for the three divisions.

[English money and United States equivalents.]

Distances.	Division I.					
	Per imperial gallon.		Per can.		Per returned empty cans.	
	Pence.	Cents.	Pence.	Cents.	Pence.	Cents.
Rate for conveyance:						
Any distance not exceeding 20 miles	0.50	1			1.50	3
Exceeding 20 miles, but not over 50 miles .....	.60	1½			2	4
Exceeding 50 miles, but not over 75 miles .....	.70	1¾			2.25	4½
Exceeding 75 miles, but not over 100 miles .....	.90	1¾			2.50	5
Exceeding 100 miles, but not over 150 miles	1	2			3	6
Exceeding 150 miles	1.20	2½			3	6
Station terminal at each end			1.50	3		
Service terminals:						
Loading			1	2	.50	1
Unloading			1	2	.50	1

Distances.	Division II.				Division III.			
	Per cwt. per mile.		Per cwt.		Per cwt. per mile.		Per cwt.	
	Pence.	Cents.	Pence.	Cents.	Pence.	Cents.	Pence.	Cents.
Rate for conveyance:								
First 20 miles, or under	0.60	1½			0.40	2		
Next 30 miles, or under .....	.45	1¼			.30	1½		
Next 50 miles, or under .....	.24	1			.13	1		
Remainder of the distance .....	.10	¾			.12	¾		
Station terminal at each end			0.75	1½			0.75	1½
Service terminals:								
Loading .....			.75	1½			.50	1
Unloading .....			.75	1½			.50	1

In the Cleator and Workington Junction Railway act, the rates for conveyance for distances beyond 50 miles are omitted.

In the following acts, the East London Railway, etc.; the Festiniog Railway, etc.; the Isle of Wight Railway, etc.; the North London Railway, and the City of Glasgow Union Railway, the rates for conveyance are limited to those set forth in the first column of the above scales.

PART VI.—SMALL PARCELS BY MERCHANDISE TRAIN.

This part of the maximum rates and charges is common to all the railway rates and charges orders confirmation acts of 1891 and 1892.

1. For small parcels by merchandise train, not exceeding in weight 3 hundred-weight, the company may charge, in addition to the maximum rates for conveyance, and the maximum station and service terminals, authorized by this schedule, which rates and charges are in this part together referred to by the expression "the maximum tonnage charge," the following:

Authorized additional charge per parcel.		When the maximum tonnage charge exceeds, per ton—		When the maximum tonnage charge does not exceed, per ton—	
English money.	United States equivalent.	English money.	United States equivalent.	English money.	United States equivalent.
s. d.		s. d.		s. d.	
0 5	\$0.10	—	—	20 0	\$4.87
0 6	.12	20 0	\$4.87	30 0	7.30
0 7	.14	30 0	7.30	40 0	9.73
0 8	.16	40 0	9.73	50 0	12.16
0 9	.18	50 0	12.16	60 0	14.60
0 10	.20	60 0	14.60	70 0	17.03
1 0	.24	70 0	17.03	80 0	19.46
1 2	.28	80 0	19.46	90 0	21.89
1 4	.32	90 0	21.89	100 0	24.33
1 6	.36	100 0	24.33	—	—

2. Where, for a parcel exceeding in weight 3 hundredweight, the maximum tonnage charge comes to less than the company are authorized, according to the above table, to charge for a parcel of 3 hundredweight in weight, the company may charge for such parcel as if its weight was 3 hundredweight.

3. A small parcel under this part of the schedule may consist of one consignment of two or more packages of merchandise comprised in the same class of the classification of not less than 14 pounds each in weight.

4. For a small parcel of less than 28 pounds in weight the company may charge as for a parcel of 28 pounds in weight.

5. For a fraction of 14 pounds in weight the company may charge as for 14 pounds in weight.

6. Any small parcel (other than a parcel of mixed groceries) containing articles belonging to different classes of the classification shall be chargeable with the maximum tonnage charge applicable to the highest of such classes.

7. If the consignor of a small parcel declines, on demand by the company, to declare to the company the nature of the contents of the small parcel before or at the time when the same is delivered to the company for conveyance, the company may charge for the parcel as if it was wholly composed of articles comprised in class 5 of the classification.

8. Nothing in this part of this schedule shall apply to returned empties.

WILLIAM F. GRINNELL,
Consul.

MANCHESTER, *March 28, 1895.*

STATISTICS OF BRITISH RAILWAYS.¹

The following table shows the total length of British railways open at the end of the years given, and the average yearly increase in miles:

Year.	Line open.	Average yearly increase.	Year.	Line open.	Average yearly increase.
	<i>Miles.</i>	<i>Miles.</i>		<i>Miles.</i>	<i>Miles.</i>
1850	6, 621	265	1880	17, 933	240
1860	10, 438	381	1890	20, 073	214
1870	15, 537	510	1893	20, 646	191

Of the total length of line open January 1, 1894, there belonged to England and Wales 14,440 miles, to Scotland 3,215 miles, and to Ireland 2,991 miles.

The following table gives the length of line open, the capital paid up, the number of passengers conveyed, and the traffic receipts of all the railways of the United Kingdom in 1878, and of the five years to 1893:

Year.	Length of line open at the end of each year.	Total paid-up capital (shares and loans) at the end of each year.	Number of passengers conveyed, exclusive of season ticket holders.	Receipts.		Total receipts, including miscellaneous receipts.
				Passenger.	Freight.	
1878.....	<i>Miles.</i> 17, 353	£698, 545, 154	565, 024, 455	£26, 869, 614	£23, 564, 761	£82, 862, 674
1889.....	19, 943	876, 595, 166	775, 183, 073	32, 680, 724	41, 086, 333	77, 025, 017
1890.....	20, 073	897, 472, 026	817, 744, 046	34, 327, 965	42, 220, 382	79, 948, 702
1891.....	20, 191	919, 425, 125	845, 463, 668	35, 130, 916	43, 230, 717	81, 860, 607
1892.....	20, 325	944, 367, 320	864, 435, 388	35, 662, 816	42, 866, 498	82, 092, 040
1893.....	20, 646	971, 323, 323	873, 177, 052	35, 845, 449	40, 994, 637	80, 681, 892

¹ Compiled from the Statesman's Year Book for 1895.

Of the total capital at the end of 1893, the English railways had £800,680,677 (\$3,896,112,174); Scottish, £131,884,101 (\$641,745,835), and Irish, £38,758,575 (\$188,599,226). In the division of the receipts of 1893, England and Wales took £68,252,504 (\$332,114,484); Scotland, £9,130,718 (\$44,430,074), and Ireland, £3,248,670 (\$15,808,628). The working expenditures amounted to £45,695,119 (\$222,352,449) on all the railways, being 57 per cent of the total receipts.

EARLY ENGLISH RAILWAYS.¹

The historical account of the navigable rivers, canals, and railways throughout Great Britain, compiled by Joseph Priestley, and published in the year 1831, gives something like sixty separate titles of railways then constructed or projected. It will, of course, be well understood that these were vastly different in length, capacity, and fashion of working from their successors of the present day.

The writer has in his possession a photograph of one of the early trains, taken from an engraving of the year 1812, and representing the occasion when, to quote from an inscription written upon the print, in a hand more bold than elegant:

June 24, 1812, the fly engine come to the Bird in hand and Leeds with 8 waggons.

The "fly engine" presented has a large cogwheel at one side, which, engaging in a row of teeth laid along the track, propels the engine and the "8 waggons" attached to it at the rate, we are further told, of "3½ miles an hour on a level railroad." What its capacity for speed might be on a steep grade is left to be conjectured.

The threescore railroads existing or contemplated in 1831 were not very far advanced in facilities beyond the 3½ miles an hour fly engine; although the Rocket locomotive had been turned out by Stephenson in 1829, and the months in that era were capable of counting progress with the years which had preceded it.

These railroads of 6 and 10 miles in length, as already indicated, had been adopted from the tramways of the coal mines; and they were operated first by horse power, and later on by machines such as the "fly engine" of the Middleton road here at Leeds referred to above. They were soon, however, to be developed into 1,500 and 2,000 mile lines and the 60-mile speeds which have come after them. Little more than three-quarters of a century has passed since the Middleton fly engine was deemed worthy of having its portrait made; and railroads are now quite other than they were. Their elder sisters, the canals, however, have had no such progress. In many cases, they remain to-day essentially as they were left by the men who constructed them. A witness before the select committee on canals in 1883 says the existing canals were constructed when railways were unknown, and are entirely behind the needs of the times; and that they must be improved

¹ From Special Consular Reports "Canals and Irrigation."

before they can compete with railways. Another witness states that the locks and waterways of canals are altogether wanting in uniformity; scarcely two canals have a common gauge. Even on the same canal, there may be two or three different gauges of locks. Almost every engineer who made a canal seems to have adopted a different gauge, although they may form portions of a continuous route.

With such conditions as are set forth in this evidence and elsewhere, the short links originally built for merely local use, the irregular and in many instances the insufficient dimensions which often even now remain unaltered, the lack of cooperation in management following on the divided ownership, and the absence of through routes—some or all of these elements separately or in combination have sufficed to exercise a malefic influence to interfere with and sometimes to prevent the profitable operation of these waterways.

BRITISH CANALS.

The Statesman's Year Book for 1895 gives the following table, which shows for 1888 (the latest available statistics) the length, traffic, revenue, and expenditure of the canals of England and Wales, Ireland, and Scotland:

Division.	Length.	Trade.	Revenue.	Expenditure.
Canals not belonging to railways:	<i>Miles.</i>	<i>Tons.</i>		
England and Wales.....	2,026	27,715,875	£1,439,343	£861,068
Scotland.....	69	69,744	12,011	16,086
Ireland.....	513	489,194	89,369	71,541
Total.....	2,608	28,274,813	1,540,723	948,695
Canals belonging to railways:				
England and Wales.....	1,024	6,600,304	437,080	385,503
Scotland.....	84	1,386,617	57,178	26,599
Ireland.....	96	30,386	6,495	4,456
Total.....	1,204	8,026,307	500,753	366,558
Grand total.....	3,812	36,301,120	2,041,476	1,315,253

The following extracts, relating to British canals, are taken from Special Consular Reports "Canals and Irrigation" (pp. 169-251), published by the Department of State in 1891, to which the reader is referred for detailed information, the republication of which would swell this volume beyond reasonable proportions:

EARLY ENGLISH CANALS.

Traces of legislation with a view to facilitating communication by means of waterways are discoverable in England as far back as the reign of Henry I; who, in the year 1121, is supposed to have caused the Fossdike Canal (called an ancient Roman work) to be scoured out "for the purpose of opening a navigable communication between the Trent and the Witham at the city of Lincoln, so that that place, which was

then in a very flourishing state and enjoying an extensive foreign trade, might reap all the advantages of a more ready communication with the interior."

This was in 1121. Time's irony could scarcely be more keenly marked. The foreign trade of Lincoln is no longer extensive. The city is chiefly known to-day, and to the outside world, for its relics of the past, its magnificent cathedral and other heirlooms of departed greatness; but the Fossdike is there still. It is about 11 miles long and level through its course. Despite its old age, it gives no evidence of senility, but bears the barges which bring to the good citizens of Lincoln their coals with a surface as serene and equable as when, in the days of Edward the Confessor, the King's monnetari at Nottingham had the care of the River Trent and of the Fossdike and of the navigation therein.

One of the earliest of the English canals was also in that district, the Caerdyke, cut by the Romans to connect the River Nene from a point near Peterboro, in Northamptonshire, with the River Witham, 3 miles below Lincoln. This work was some 40 miles in length. It has been disused for centuries.

The Fossdike would appear to have been a prolongation of the Caerdyke, and the combination suggests perhaps as vividly as any the mode of origin and development of the canal system in this island.

The first canal seems merely to have been for supplements to the already existing water courses. They were not independent works intended to supply a separate method of transportation.

As the Caerdyke led from the River Nene near Peterboro to the Witham, below Lincoln, and the Witham was joined by the Fossdike to the Trent at Torksey, whence the Trent empties into the Humber, one of whose affluents is the Ouse, this apparently trifling length of 11 miles of the Fossdike navigation was or might have been the completing link in an inland course from Northamptonshire to York, which was the capital of Roman Britain. It remained for a much later date for the chain to be taken up and borne by the Aire and the Calder from the Ouse to Leeds and Wakefield, and thence by other canals across the Pennine Hills to Manchester, Liverpool, and the Irish Sea.

During the twelfth and the succeeding centuries up to the sixteenth, little attention was apparently paid to the opening of new channels of traffic by water, and, indeed, until the eighteenth century no widespread endeavor manifests itself to add to the natural routes supplied by the various creeks and rivers.

LEEDS DISTRICT CANALS.

The lord mayor and the aldermen of York were appointed in 1462 conservators of the Ouse and other rivers connected therewith. During the five decades, 1828 to 1868, the traffic averaged about 110,000 tons per annum. The navigation in 1872 extended from 8 miles above York to the confluence of the Trent, Ouse, and Humber—60 miles.

The Aire and Calder was incorporated in 1699, and subsequent acts of Parliament were procured in 1774, 1820, and 1828. In point of construction and operation, this has been regarded up to the present time as the model canal in England.

Up to 1872, there had been expended on this work more than £2,000,000 (\$9,733,000), out of which, borrowed and then due, there remained about £500,000 (\$2,433,250). Interest was paid on this sum before declaring dividends. The amount of share capital and debt is not limited by the acts of incorporation. Proprietors' interests are said to be estimated by the proportion borne to dividend. In 1872 it was stated that the Aire and Calder dividend had ranged up to that time from £40,000 (\$194,660) to £72,000 (\$350,388).

In 1872, reconstruction of the canal for the fourth time was taking place.

The canal was originally made 3 feet 6 inches in depth, and the locks were 60 feet by 15 feet by 3 feet 6 inches. Under the act of 1774 the locks were made 66 feet by 15 feet by 5 feet throughout the system. In 1820 the Goole Canal was constructed, with locks 72 feet by 18 feet by 7 feet and, under the act of 1828 these dimensions were extended to the whole navigation. Since the year 1860 a general improvement had taken place previously to 1883, with locks 215 feet by 22 feet by 9 feet. At that date (1883) these changes lacked about three years' work of being complete as to the routes from Goole to Leeds and from Goole to Wakefield. The canal itself was then 66 feet wide. From 1860 to 1883 £600,000 (\$2,919,900) was said to have been expended in improvements and purchases of mill power and water rights, etc.; of this amount £100,000 (\$486,650) was spent on the port of Goole and £32,000 (\$155,728) in purchasing the Bradford Canal.

A summary given in 1883 makes the distances as follows:

Goole to Wakefield, 37 miles; Goole to Leeds, 36 miles; Barnsley branch, 12 miles (acquired in 1871); Bank Dole branch, 11 miles (Bank Dole, 18 miles from Goole to Selby).

Navigation of the River Aire to Rawcliffe and intermediate points not touched by the canal was also in the hands of the Aire and Calder; so that the total length of the undertaking, reckoning canal and river together, was about 80 miles.

Over the Aire and Calder proper, not including the Barnsley Canal, the traffic in 1872 amounted to about 2,000,000 tons, total; equivalent to 42,250,000 tons carried 1 mile. At the same period the rate of the Barnsley was about 250,000 tons per annum, and that of the Calder and Hebble 556,000 tons.

The gross tonnage of the Aire and Calder is given as follows: In 1838, 1,383,971 tons; 1848, 1,335,783 tons; 1858, 1,098,149 tons; 1868, 1,747,251 tons.

The locks of the Aire and Calder are divided; one length takes two boats and the other length takes one boat, so as to save the water.

Three boats of the Leeds and Liverpool Canal will go through the Aire and Calder locks at once.

A large culvert extends alongside the lock, with one sluice at the upper end of the lock 7 by 5 feet (the ordinary sluice is 2 or 3 feet square), and at the lower extremity of the lock is another sluice. When that is closed and the lock is empty the upper sluice is raised. It is self-balanced, like a throttle valve. Three orifices open into the elongated lock, arranged so as to divide the boats and prevent their knocking together when they are in the lock. To empty the lock the upper sluice is closed, the lower one opened, and the water drawn into the culvert and discharged at the lower end. This plan is used instead of discharging the water at the gate. The sluices are practically self-acting; two turns of the sluice handle raise it and three turns lower it. The lock is said to be filled and emptied with much more celerity by this plan than in the ordinary way, by the gates.

By way of the Aire and Calder, there are three routes from Hull and Goole to Liverpool, viz: (1) Through Leeds, by Aire and Calder, Leeds and Liverpool; (2) through Wakefield, by Aire and Calder, Calder and Ribble, Rochdale, Bridgewater, Mersey River; (3) through Wakefield, by Aire and Calder, Calder and Hebble, Sir John Ramsdin's, Huddersfield, Ashton, Rochdale, Bridgewater, Mersey River

The distances are given as follows:

Route.	Miles.	Route.	Miles.
<i>No. 1.</i>		<i>No. 3.</i>	
Hull to Goole.....	26	Hull to Wakefield.....	63
Goole to Leeds.....	36	Wakefield to Cooper Bridge.....	13
Leeds to Liverpool.....	128	Cooper Bridge to Ashton.....	24
		Ashton to Rochdale Canal at Manchester.....	44
Total.....	190	Manchester to Liverpool.....	42
<i>No. 2.</i>		Total.....	
			146½
Hull to Goole.....	26		
Goole to Wakefield.....	37		
Wakefield to Sowerby Bridge.....	22		
Sowerby Bridge to Manchester.....	33		
Manchester to Runcorn.....	27		
Runcorn to Liverpool.....	15		
Total.....	160		

The Barnsley branch was purchased by the Aire and Calder in 1871. The fifteen locks on this branch were subsequently lengthened from 66 feet, their length in 1871, to 85 feet, increasing the viable tonnage from 75 to 115. This took two years and cost about £7,500 (\$36,498.75), somewhat over £500 (\$2,433.25) per lock. It made the locks of the Barnsley Canal in 1883, 85 by 15 by 6 feet. The Silkstone extension on this branch is now (1890) used merely for water supply, and is without traffic; it is 2 miles in length. It had formerly a large coal traffic on it.

The branch of the Aire and Calder from Bank Dale to Selby distributed to York, Tadcaster, and Malton, with considerable trade in 1883, which still continues.

The old line through Haddlesey and Snaith to the Ouse was in 1883 nearly disused on account of its circuitousness, and the locks remained at 5 feet, the depth of 1776. The new lines to Goole and to Selby had absorbed the traffic, leaving but a little in coal and timber to the old route. The good navigation through Whitley and Pollington is called the Knottingley and Goole Canal.

In 1883, vessels up to 167 tons burden were going on the line from Goole to Leeds or to Wakefield.

The principal tonnage in 1872 was coal, but they had also a large traffic in grain, stone, timber, dyewoods, and general goods.

There were two recognized systems of traffic on the Aire and Calder, the quick transit or merchandise system and the slow transit or mineral system. The company acted as carriers in addition to being takers of toll, and they do so still. I learn from the company that they convey in the capacity of carriers and by means of flyboats (hailed by steam so far as their own waters are concerned) large quantities of merchandise between the ports of Hull and Goole and Leeds, Bradford, Shipley, Bingley, Keighley, Skipton, Colne, Burnley, Accrington, Blackburn, Wigan, Liverpool, Waterfield, Dewsbury, Barnsley, Mirfield, Huddersfield, Brighouse, Halifax, and Sowerby Bridge. Through their agents, they say, they also carry to Rochdale, Todmorden, Littleboro, Heywood, Manchester, and other places. They say the rates of carriage charged by water are less than those of the competing railway companies.

The merchandise traffic of the Leeds and Liverpool Canal was leased to certain railway companies for twenty-one years expiring in 1874. On certain percentages of liability the railways paid so much a year for the merchandise traffic, leaving the mineral traffic and the maintenance of the canal with the canal company. Since the termination of the lease, according to Mr. Bartholomew's evidence in 1883, from which I derive these facts, through rates for the Aire and Calder and the Leeds and Liverpool had been arranged. A reasonable and fair increase of traffic, more than was due to the general increase of the traffic of the country, had resulted.

The Leeds and Liverpool Company themselves had become carriers since the lease expired, and had carried merchandise traffic themselves largely.

A recent newspaper report makes an estimate of the amount expended on the Leeds and Liverpool Canal from the commencement of the undertaking to the present date, that is to say, from 1770 to 1889, and reckons the total sum at £1,500,000 (\$7,299,750), of which by far the greater part is deemed to have been contributed from savings out of revenue.

LIVERPOOL DISTRICT CANALS.

The principal canals in this district are the Shropshire Union Canals, made up of several canals, as stated below; the Leeds and Liverpool Canal, and the Manchester Ship Canal, formerly the Bridgewater Canal.

Originally, they were built generally with sloping sides, but more recently the sides are perpendicular, and the towpath side is protected by a granite wall, the other side being simply earth, protected where necessary by piling.

The locks are chiefly of stone and brick, but latterly concrete is preferred for this. The lock gates are of elm, oak, or teak wood.

The Shropshire Union Canals afford the shortest and best canal route between the Mersey and the South Staffordshire and Birmingham iron districts, and the only water route between that river and Shropshire and North Wales, Cheshire, and Chester. They also join the North Stafford Canal at Middlewich, and thus provide water communication between the Shropshire Union system and North and South Staffordshire, and also Warrington and Manchester districts.

(1) Chester Canal, between the River Dee at Chester and Nantwich, a distance of 20 miles, the statutory authority for which was given in 1772.

(2) The Ellesmere Canal, from Carreghofa in Montgomeryshire, where it joins the Montgomeryshire Canal, to Hurlleston in Cheshire, where it joins the Chester Canal, with a branch from the Dee at Chester to the River Mersey at Ellesmere Port. The distance traversed covers 86 miles. The act of Parliament was passed in 1793.

(3) The Birmingham and Liverpool Canal, from Autherly, a point of junction with the Stafford and Worcester Canal near Wolverhampton, to Nantwich, where it joins the Chester Canal, with a branch to the Shrewsbury Canal at Norbury Junction, the distance covered being 53 miles. Authority for construction was given in 1826.

(4) The Montgomeryshire Canals, from Correghofa (where the Ellesmere Canal begins) to Newtown in Montgomeryshire, with branches. The distance covered is 25 miles. The authority for this was given in 1794.

(5) The Shrewsbury Canal, from Wombridge to Shrewsbury in Shropshire, the distance covered being 22 miles, the authority for which was granted in 1793.

The whole of these canals were formed into the Shropshire Union Company in the year 1846.

The total length of the various canals forming the company's system is about 206 miles.

The canal from Nantwich to Ellesmere Port (its terminus), where it joins the River Mersey, is sufficient to pass lighters and flats carrying from 40 to 60 tons, and such craft are constantly employed upon it.

On other parts of the system narrow boats 7 feet wide are used, which carry from 18 to 30 tons, according to the depth of water. The depth of water varies from 3 feet to 4 feet 6 inches.

The locks on the canal from Chester up to Nantwich are broad, and admit two narrow boats at a time. On other lengths they are narrow.

In all districts, the width of the waterway is sufficient to admit of two narrow boats passing at the same time, except through the locks, tunnels, and aqueducts.

LONDON DISTRICT CANALS.

Regent's Canal.—By courtesy of Mr. E. Thomas, the engineer and manager of the Regent's Canal, I am informed that, under the authority of the British Parliament, the canal was commenced in the year 1812 and occupied about eight years in construction, being opened for traffic in the year 1820. It was constructed in the ordinary manner, but differs from other canals by having two locks at each variation of level, side by side, to economize consumption of water.

The Limehouse dock has a water area of 10 acres, and extensive quayage, with a ship entrance 350 feet long, 60 feet wide, and with sills laid 28 feet below Trinity high-water mark; also an entrance for barges 79 feet long, 14 feet 6 inches wide, with sills laid 22 feet below Trinity high-water mark.

The wharves and jetties in the dock are provided with hydraulic and other cranes for transshipping and loading coals and other goods up to 15 tons weight.

The dock, which is within and part of the port of London, is most conveniently situate on the north bank of the River Thames, about a half-mile below the Shadwell entrance to the London docks, $1\frac{1}{2}$ miles below London Bridge, and one-third of a mile above the Limehouse entrance to the West India docks, and is close to the Stepney station of the London and Blackwall Railway, which is reached by trains from Fenchurch street station in eight minutes; and trains run to and from this station to all stations on the Great Eastern Railway, and the London, Tilbury and South End, Thames Haven and London, Woodford and Ongar branches thereof, and also in communication with the trains of the North London Railway Company passing Bow station.

Screw steam vessels to and from Liverpool, calling at Falmouth, Plymouth, and Southampton, leave and arrive at the dock weekly. London agents, J. D. Hewett & Co., 101 Leadenhall street, and John Allen & Co., 150 Leadenhall street.

The jetties in the dock are capable of transshipping and weighing with great rapidity and small breakage coal from screw steamers and other vessels into craft for the River Thames and other inland navigations. The Regent's Canal communicates with the dock and River Thames, and is navigable for barges of 100 tons burden. It passes through Stepney, Mile End, Bethnal Green, Hackney, Shoreditch, St. Luke's, Islington, St. Pancras, Marylebone, and Paddington, in which last-named parish it communicates with the Grand Junction Canal.

Large warehouse accommodation and extensive wharf area for storing timber, stone, and other goods are provided within the dock premises.

The company are permitted under a sufferance license (Class B), received from the honorable board of customs, to receive into the dock, and land upon the quays, or transship into craft for the river or canal, every description of goods and grain.

The facilities which are now afforded at this company's dock are strongly recommended to the notice of traders and lightermen on the Thames and the Regent's Canal, Hertford Union Canal, Grand Junction Canal, River Lee, and other inland navigations connected therewith, as considerable inconvenience, detention of vessels, and expense, also risk of damage to valuable cargoes, such as grain, etc., in barges, consequent upon navigating the River Thames, would be avoided by using the dock.

The Great Eastern, Great Northern, Midland, and London and North-western Railway Companies have their goods termini on the banks of this canal, and the Great Western Railway upon the Paddington Basin.

Grand Junction Canal.—This canal was constructed, under an act of Parliament, in the year 1873. The length of the main line and its branches is about 140 miles, and the carrying capacity of barges navigating the canal varies from 50 to 76 tons, according to the craft and section of canal navigated. This company has power to charge toll for distances of about 100 miles of 16s. 10½d. per ton, but in point of fact the traffic will only bear a toll of 2s. 6d. a ton over that section, thus showing a large reduction that has now been effected on the expectant sources of revenue at the time of construction.

This canal, for 30 miles from the River Thames at Brentford, Middlesex, was partly constructed by canalizing the rivers Brent, Colne, Gade, and Bulbourne, and is not much used for irrigating purposes.

The Surrey Canal.—The canal belonging to this company was constructed in the year 1807. The canal is a short one—only 4 miles in length, being part of a scheme devised in the early part of this century for communication from Rotherhithe, which is about 1½ miles from London Bridge, to Battersea, which is about 3 miles from London Bridge, but the plan was not carried out in its entirety, and the canal terminates at Camberwell and Peckham, suburbs of London. The canal was constructed for the class of barges ordinarily navigating the river Thames, and is camp-sheeted for nearly its entire length, rendering the full width available.

The traffic consists entirely of barges engaged in supplying the wharves and premises on the banks of the canal with goods which enter the company's docks at Rotherhithe.

The premises on the canal are chiefly occupied as tar distilleries, chemical manufactories, and wood yards, and a large part of the revenue from the canal is derived from the dues on coals which are brought up the canal to the South Metropolitan Gas Company, whose works have a water frontage on the canal. The canal is virtually a part of this company's dock system.

Length of canal	miles..	4
Width at surface	feet..	58
Width at bottom	do..	52
Number of locks		1
Lift of locks	feet..	3½
Length of locks	do..	120
Average load	tons..	80
Maximum draft of boats	feet..	4½
Maximum width of boats	do..	17½

SHEFFIELD DISTRICT CANALS.

The Sheffield and Tinsley Canal, the Dun Navigation, the Stainforth and Keadby Canal, and the Dearn and Dove Canal were constructed about one hundred years ago, and there has been but little improvement in them since they became the property of the Manchester, Sheffield, and Lincolnshire Railway Company in the year 1849. The size of these canals is such as to limit boats and barges trading between Sheffield and the River Trent to a carrying capacity of about 80 tons each. The use of steam as a propelling power is prohibited, and the length of time required to pass between Sheffield and tide water averages about a week. The locks are small and numerous, and from the canal into the Trent only one boat can be passed through at a time, giving a total of only about twenty boats at each tide. In spite of this unfavorable condition, however, not less than 500,000 tons of through traffic pass the lock at Keadby in the course of a year.

The canals being in the possession of a railway company which reaches the same points between Sheffield and the coast, there is, consequently, no competition in rates or traffic between the two. Thus the railway company's rate on coal for shipment at Hull from South Yorkshire amounts to 2s. 10d. (69 cents) per ton, or double the rate charged by the Aire and Calder Canal over an equal distance from the West Yorkshire collieries to Goole.

THE MANCHESTER SHIP CANAL.¹

This great enterprise—the cutting of a canal from tide water at Liverpool 35½ miles to Manchester, 172 feet wide, 26 feet deep, capable of permitting vessels of 6,000 tons to steam directly to this city—is so nearly completed that the opening for traffic is officially arranged for January 1, 1894.²

This canal has already cost some \$75,000,000, \$35,000,000 more than the original estimates, owing to unforeseen engineering difficulties, the deceptive nature of the soil, and other causes.

The total fall from the water level in Manchester docks to Liverpool is 60½ feet. For 14 miles out from Manchester the rivers Irwell and Mersey form the course of the canal; but many of the crooks and bends of these tortuous streams have been cut off, so that, with the exception

¹ Extract from report of Consul Grinnell, of Manchester, November 28, 1893, printed in Consular Reports for February, 1894.

² Since opened and in operation.

of a few gradual curves, the course for the whole length of the canal is due west to Liverpool. The width and depth are as follows:

	Feet.
Average width at the water level.....	172
Minimum width at the bottom	120
Minimum depth of water throughout	26

There are five large locks, five intermediate, and one small one, viz:

Location.	Dimensions of large locks.	Dimensions of interme- diate locks.	Rise.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
Eastham, tide water.....	600 by 80	350 by 50	.....
Letchford.....	600 by 65	350 by 45	16½
Irlam.....	600 by 65	350 by 45	16
Barton.....	600 by 65	350 by 45	15
Mode Wheel.....	600 by 65	350 by 45	13

The capital (I copy from a publication of June last) is thus set down:

Ordinary shares	\$19,466,000
Preference shares.....	19,466,000
Loan received.....	27,252,400
Total.....	66,184,400

The borrowing powers are \$9,733,000.

As regards the United States, the object of the undertaking is to induce exporters to ship cotton and food products direct to Manchester. The directors are responsible for these two statements: First, three-fourths of all cotton coming to the British Islands is manufactured in Manchester and vicinity; second, within a radius of 30 miles there are 7,500,000 mouths to feed.¹

¹ *Finances of the canal.*—The following statistics were received from Consul Grinnell (Manchester, June 9, 1894), and published in Consular Reports for July, 1894, in reply to a Department instruction, prepared at the request of a Philadelphia city commission inquiring into a proposition for a ship canal:

I have to acknowledge the receipt of your instruction to report upon the operations of the Manchester Ship Canal since its opening, i. e., "statistics covering the commercial success or nonsuccess of the canal." On Saturday, June 9, 1894, figures were, for the first time, given out by Mr. J. K. Bythell, chairman of the traffic and rates committee of the ship canal.

The traffic on the ship canal for the five months ending May was as follows:

Merchandise in sea going vessels (211,915 tons).....	£28,868 = \$140,472
Merchandise in barges (63,785 tons).....	919 = 4,472
Ships' dues.....	395 = 1,922
Passengers (323,056).....	3,469 = 16,880
Cattle (979).....	50 = 243
Total.....	33,701 = 163,989

As regards working expenses, it may be said, broadly, that the revenue for the five months will more than cover (1) all the expenses connected with the traffic, including wages, salaries, and stores; (2) rates; and (3) a full proportion of head-office expenses during the same period. Maintenance is not included. Until the works are more complete; I take it that all outlay on works will be a charge against capital.

IRISH CANALS.

The canals and inland navigation enterprises in Ireland are of three classes, viz :

First. Those owned and operated by private companies or corporations. Under this head are the following: The Grand Canal, with a total length, including branches, of 165½ miles; the Barrow Navigation, partly canal and partly river, 42 miles; the Upper Boyne, all river, 6 miles, completed in 1800; the Lagan, mostly river, 26 miles; the Newry, canal and river, 35 miles; the Suir, all river, 16 miles; the Royal Canal, 96 miles. These, of course, are maintained out of funds belonging to their respective companies. From their importance, the Grand Canal, the Royal Canal, the Barrow Navigation, and Lagan Navigation will be considered separately and in greater detail further on. The improvements upon the routes described by the Upper Boyne, the Newry, and the Suir were largely accomplished by means of assistance in the forms of loans of public money, or by grants from general or special taxes. Some of these loans have been paid and some remitted. There is no considerable traffic upon these canals now, and the profits derived therefrom are small.

Second. Those owned and operated by the Government and maintained out of imperial funds. This class is composed of the following lines: The Lower Boyne, canal and river, 19 miles; the Maigne, all river, 8 miles, improved in 1751; the Shannon, chiefly river, 158 miles; the Tyrone, all river, 4 miles; the Ulster Canal, 44 miles. The improvement or construction of these channels, as the case may be, was accomplished by direct grants of the public funds and advances realized from local assessment. The latest reports rendered by the commissioners, under whose management are these several lines of navigation, show that the total annual receipts amount to £6,584, and the annual disbursement for expenses for all purposes to £6,192. Thus it will be seen that the receipts derived from rents, tolls, etc., make them a trifle more than self-sustaining. Of the lines mentioned, the Shannon Navigation and the Ulster Canal are the most important. The improvement of the former involved an outlay of £683,312, and the construction of the latter about £170,000.

Third. Those under the direction of local trustees. This class includes the Ballymore and Ballyconnell, mostly canal, 37 miles; the Lower Bann, mostly river, 50 miles; the Upper Bann, all river, 21 miles, and Lough Corrib, mostly river, 23 miles. The improvement or construction of these lines, as described, was also accomplished by grants of public money and advances secured in local taxation, amounting in the aggregate to about £600,000. These public works covered a period from 1845 to 1859. The group, as given above, is also a little more than self-sustaining. With the exception of the first mentioned, the latest figures show that the total annual receipts are £3,261, and the total disbursements are £2,553. As stated, these works are managed by local trus-

tees, representing the property interests which are contiguous to the several lines. In case of a deficiency, the difference is made up by means of local taxation. In case of a surplus, the local taxation is less by that amount. The system of management is the same as that which applies to public highways.

Grand Canal.—This is the most important artificial waterway in Ireland. Its main line extends from Dublin westward to the Shannon River, and from thence westward to Ballinasloe, with branches to the Liffey, Robertstown, Blackwood reservoir, Monastereven, St. James Well, Athy, Mountmellick, Edenderry, and Kilbeggan. Its summit level is 279 feet above sea level, which point is 26 miles west of Dublin. The locks upon this canal are 60 feet in length, 13 feet in width, and have 5 feet lift. Although steam is used somewhat horses are used principally as the power for moving the boats. The traffic upon this canal amounts to 600,000 tons annually. The Grand Canal now earns for the shareholders £1 15s. on each £100 of the capital stock. The construction of the Grand Canal was commenced in 1753, and the main line was completed in about 1800. The line west of the Shannon River and the branches were opened in 1830. The entire work involved an outlay of £2,000,000. A considerable portion of this amount was made up by grants from special or general taxes and also by loans, a part of which has been repaid to the Government, and a part of which has been remitted. The present capitalization of the company is £165,000.

Royal Canal.—The Royal Canal proceeds northwesterly from Dublin to Oloondara, on the Shannon, with a branch to Longford; the total length of channel being 96 miles. Its summit level is 324 feet above sea level. It is fed from Lough Owel, near Mullingar. The dimensions of the locks are 70 feet in length, 13 feet in width, with 5 feet lift. The Royal Canal Company was organized in 1784. The first 46 miles of the channel was completed in 1813. The remainder of the work was completed in 1822. It received large assistance from the Irish Parliament, and from the Union after that was established. The total cost of the work was something over £1,900,000. In 1813 the original company became insolvent, the charter was forfeited, and the property transferred to the directors-general of inland navigation. Again, in 1845, the Royal Canal was transferred to the Midland Great Western Railway Company, the consideration being £298,050. An essential condition of the transfer was that the purchaser should maintain the navigation and not vary the tolls except with the assent of the lord lieutenant of Ireland. Being its own competitor, however, the company does not utilize the facilities of the canal to any considerable extent. The annual tonnage amounts to only 86,500, on an average.

Barrow Navigation.—This route connects the Athy branch of the Grand Canal with the tidal part of the River Barrow, below St. Mullins, and affords water communication to Carlow, Leighlin Bridge, Bagnalstown, Goresbridge, and Graignamanna, and thence by tidal part of the

Barrow to New Ross and Waterford. The work was commenced in 1759, and up to 1790 cost £80,769, about one-half of which was derived from public sources. It also received other grants after the Union, but the exact amount is not available. There is considerable traffic upon this route, but I have been unable to get figures showing annual tonnage; the profits to the shareholders are moderate.

Lagan Canal.—This is owned by the Lagan Navigation Company. The works were commenced by the commissioners of navigation for Ireland, the expense being defrayed by a local toll on beer, ale, and spirits imposed by an act of 1753.

In 1771, prosecution of work was delegated to local commissioners, who raised money on the securities of the tolls. Afterwards these creditors were constituted a company by act of Parliament. The canal extends from Belfast to Lough Neagh, 26 miles, and has twenty-six locks capable of passing lighters 62 feet by 14 feet 6 inches, with a maximum draft of 5 feet 6 inches.

The traffic is about 156,000 tons per annum, consisting of coal, Indian corn, timber, slates, bricks, etc., and return cargoes from Lough Neagh of sand for building purposes.

The company is managed by a Belfast board of directors, with secretary and manager of works.

The company are not carriers. The lighters trading are owned by different individuals. Wherever the canal touches, railway rates are brought down to canal rates. Roughly, the effect in cheapening transportation would probably be about from 15 to 25 per cent, or perhaps even more.

Ulster Canal.—The works on this canal were commenced by the Ulster Canal Company under an act of 1826. Loans to the extent of £130,000 were made by the commissioners of public works in Ireland. In 1865 the canal was transferred to the commissioners in discharge of the debt. More money was expended on the canal, but under the commissioners it has been kept in such want of repair and want of water that there could be no traffic. By an act of Parliament, passed in 1838, it was transferred to the Lagan Navigation Company as a gift, with £3,500 toward cost of repairs, the company being obligated to keep it in order for the public, charging fees regulated by act of Parliament.

It is now being put in order. The canal extends from Lough Neagh to Lough Erne; 44 miles, and has twenty-six locks capable of passing lighters 65 feet by 11 feet, with a maximum draft of 5 feet when in repair.

Coal Island Canal.—Commenced in 1732 by the commissioners of Ireland, its navigation continued in their charge until 1787, when the works were transferred to parties undertaking to complete and extend the canal. In 1800, the navigation came into the hands of the directors-general of Ireland, and between 1800 and 1831 the sum of £26,240 was expended upon the works. In 1831, on the abolition of the directors-general of Ireland navigation, the management was transferred to the

commissioners of public works, in whose charge it has since continued, and a sum of £5,177 has been expended by them.

Under an act of 1888, it was transferred as a gift to the Lagan Navigation Company, with obligation to keep it in order for the public, charging tolls regulated by act of Parliament. The canal extends from the Blackwater River, which runs into Lough Neagh, to the town of Coal Island; $4\frac{1}{2}$ miles, and has seven locks capable of passing lighters 62 feet by 14 feet 6 inches, with a maximum draft of 4 feet 9 inches. Traffic, about 15,000 tons per annum.

SCOTCH CANALS.

The only system of inland navigation within the limits of the consular district of Leith (Edinburgh) is the Union Canal, an artificial waterway, extending from Port Hopetown, in the western suburbs of the city of Edinburgh, to a junction with the Forth and Clyde Canal at Port Downie (a large basin at Lock 16), adjoining the town of Falkirk, in the county of Stirling.

The construction of the Union Canal was undertaken in the year 1817. It was opened in 1822, but as a property it proved a great failure. The returns from all departments—passengers, parcels, and miscellaneous goods, coals, stone, and other minerals, manure, etc.—proved much less than had been anticipated. The real returns during the seven years after opening did not amount to \$85,000 a year, while the estimated returns had been set down at \$275,000 a year. The canal was not intended for ship transit, but solely as a waterway of inland navigation for passenger traffic and merchandise between places on its own banks, and chiefly between Edinburgh and Glasgow, and therefore it was for a long period generally called the Edinburgh and Glasgow Canal.

The company owning it worked their business with great spirit, and adopted every available means in the endeavor to make their enterprise a paying one, or even to raise it to a fairly hopeful condition; but when the Edinburgh and Glasgow Railway was opened, February 18, 1842, it was seen that the canal could not long survive as an independent system of passenger and goods traffic between the two cities. A brisk competition was maintained for some time with little success, and ultimately, in 1849, the Union Canal was amalgamated with the Edinburgh and Glasgow Railway, both of which undertakings in 1865 passed into the hands of the North British Railway Company. The Union Canal, therefore, although still remaining as a work, is quite absorbed as a business in the interests of the railway.

The total length of the Union Canal, from Port Hopetown, at Edinburgh, to the junction with the Forth and Clyde Canal at Lock 16, is $31\frac{1}{2}$ miles.

The medium width at top of bank is 40 feet; at surface of water, 37 feet, and width of water at bottom of canal, 20 feet. The depth of water is 5 feet.

There are eleven locks, $12\frac{1}{2}$ feet wide. Depth of water on sill of locks, 5 feet 9 inches. Total rise or fall of locks, 10 feet 3 inches.

The traffic consists entirely in conveyance of coals, stone, bricks, and other minerals, and manure.

The present owners are merely toll takers, not carriers. Other people put on the barges or boats. The management of this canal is entirely in the hands of the North British Railroad Company.

The Forth and Clyde Canal.—The Union Canal at its western extremity terminates in the Forth and Clyde Canal, an artificial navigable line of communication between the Firth of Forth and the Firth of Clyde.

From the Forth, at the port of Grangemouth, the navigation into the canal runs about a mile up the River Carron from low-water mark in the firth to the first lock, where there are extensive harbor accommodations. Passing southwesterly through Grahamstown and the Carron Iron Works, the canal proceeds to Camelon and reaches Lock 16, where it attains an elevation of 128 feet above the level of tide mark at Grangemouth. At Lock 16, is the large basin called Port Downie, from which the canal sends off on its east side the Union Canal Navigation to Edinburgh, above mentioned. At Windford Lock, near Castlecary, it attains its highest elevation, and continues to preserve the same onward past Port Dundas at Glasgow, on the one hand, to the junction of the Monkland Canal, and onward on the other till near the aqueduct across Kelvin water. Thence it continues to the western terminus in the River Clyde at Bowling Bay, near the village of Bowling in Dumbartonshire, on the road from Dumbarton to Glasgow.

The work of excavation was begun in the year 1768, but, on account of unforeseen difficulties, by reason of inexperience of its projectors in such schemes, the canal was not completed till 1790.

The Forth and Clyde Canal was incorporated with the Monkland Canal in the year 1846.

The extent of the Forth and Clyde Canal in all its parts is $38\frac{3}{4}$ miles. The navigation direct from the Forth to the Clyde is 35 miles; the side branch to Port Dundas, $2\frac{3}{4}$ miles; the continuation to Monkland Canal, 1 mile.

The number of locks on the eastern part of the canal is twenty, and on the western nineteen, the difference being occasioned by the higher level of water in the Clyde at Bowling Bay than in Grangeburn or the Carron at Grangemouth. Each lock is 74 feet long and 20 feet broad, and procures a rise of 8 feet.

The locks admit vessels of 68 feet keel, 19 feet beam, and $8\frac{1}{2}$ feet draft of water.

The greatest altitude of the canal is 156 feet; its medium breadth at the surface, 56 feet, and its medium breadth at bottom, 27 feet.

The canal is crossed by thirty-three drawbridges, and passes over ten large aqueducts, and thirty small ones or tunnels.

The tonnage dues imposed were, from sea to sea, 5s. 10d. (\$1.41); from Grangemouth to Port Dundas, 3s. 10d. (93 cents); from Bowling Bay to Port Dundas, 2s. (48 cents). Subsequently tonnage dues were greatly reduced, making the rate not more than 1½d. (or 3 cents) per mile, but they continued to be remunerative.

In the year 1867 the two canals passed into the possession of the Caledonian Railway Company, and that company has ever since had the entire management of both of those systems of navigation.

The Monkland Canal.—This is an artificial navigable communication between the city of Glasgow and the district of Monkland, in the county of Lanark. Commencing in the northern suburbs of Glasgow, at Port Dundas, where it is brought into junction with the Glasgow branch of the Forth and Clyde Canal, it proceeds east-southeastward through the parish of Old Monkland to the River North Calder. The canal sends off four branches, one about a mile in length to Calder Iron Works, near Airdrie, in the parish of New Monkland, one about a mile in length to Gartsherrie Iron Works, one about a quarter of a mile in length to Dundyvan Iron Works, and one also about a quarter of a mile in length to Langloan Iron Works, all in the parish of Old Monkland.

The canal originally was projected as a measure for securing to the inhabitants of Glasgow a constant and plentiful supply of coal. The corporation of the city adopted the project, and having employed the celebrated James Watt to make surveys of the ground, obtained an act of Parliament for carrying out the design, and subscribed to a number of shares of the stock.

The width of the Monkland Canal at top is 35 feet, and at bottom 24 feet. Upon the lock sills the depth of water is 5½ feet.

By reason of the advantage possessed of easy communication with both the eastern and western seas, and because of its unlimited command of coal, the vicinity of the Monkland Canal has always been reckoned favorable for the establishment of manufactures, such as iron works and others of a like nature.

The Caledonian Canal.—This is a navigable line of communication through the Great Glen of Scotland, which extends across the country directly southwest from the Moray Frith, between the mouth of the River Findhorn and two bold promontories called the Sutors of Cromarty, onward to the island of Lismore, dividing the county of Inverness and the Highlands generally into two nearly equal parts, while it connects the German Ocean and the Atlantic at those points.

The northeast end of the canal is occupied by about 23 miles of the narrow or upper portion of the Moray Frith; the southeast end is occupied to the extent of 32 miles by the sea lochs Loch Eil and Loch Linnhe, and the intermediate portion has a total length of 60½ miles, of which 37½ consist of the four natural sheets of water named Loch Dochfour, Loch Ness, Loch Oich, and Loch Lochy. This intermediate

portion is the region of the Caledonian Canal, which comprises works at its extremities and 23 miles of dry cutting.

It appears that, by reason of the decay which has been rapidly going on in many parts of the original structure, much of it has to be renewed and otherwise improved. In response to an application for assistance the Government of Great Britain has sanctioned the sum of £5,000 (\$24,332.50) as a contribution toward liquidating debt already incurred by the commissioners of the Caledonian Canal, and it is hoped that Parliament will approve of further annual sums being devoted toward the renewal of the original structure, as suggested in the report made by the superintendent.

The Crinan Canal.—This is a work at the north end of the peninsula of Cantire (otherwise Kintyre), in the county of Argyle, intended to afford a waterway between Loch Gilp and the Atlantic Ocean in order to avoid the difficult and circuitous passage of 70 miles around the Mull of Cantire. The Crinan Canal is about 9 miles long and contains fifteen locks, thirteen of which are 96 feet long, 24 feet wide, and 12 feet deep, and two locks are 108 feet long and 27 feet wide. Eight of the locks occur in the extent from Loch Gilp or Ardrishaig at the east end and seven in descending to Crinan at the west end. The canal is chiefly used by small coasting and fishing vessels and by the steamboats which ply between Inverness and the Clyde. It is navigable by vessels of 200 tons burden. The small passage steamers do the distance from one terminus to the other, including the locks, in about two hours.

It is expected that the Isthmus of Cantire at no distant date will be cut off from the mainland by the formation of a ship canal connecting East and West Lochs Tarbert. The cost of such an undertaking has been estimated at £140,000 (\$681,310).

From the foregoing description of the various lines of inland navigation at present in use in Scotland it will be noted that the three first mentioned, namely, the Union, the Forth and Clyde, and the Monkland, are all connected and worked as one system of water carriage managed and controlled entirely by railway companies.

The Caledonian Canal and the Crinan are each quite independent of railways, but both are controlled and subsidized by the Government of Great Britain.

Therefore, in the first instance there is no competition as to rate of cargo and the latter independent systems have no competing lines of transit.

There are no irrigating canals in Scotland.

Proposed ship canal.—There is a large ship canal now under consideration, a matter probably not of the near future but likely to be ultimately accomplished, which points to a waterway for large ships and steamers from the Firth of Forth to the Clyde. There are two routes recommended: One involving deep cutting, joining the Forth and Clyde with tide water, estimated to cost \$60,000,000; the other by locks joining

the Forth with Loch Lomond and Loch Long, thus making an outlet to the Atlantic a few miles west of Glasgow. The estimated cost of this route is about \$38,000,000. At a recent meeting of the promoters of this proposed canal from the North Sea to the Atlantic the latter route seemed the most feasible and received the weight of commendation.

One object to be attained by this canal is the quick and easy transportation of warships from one side of Scotland to the other, and is, therefore, related to the subject of coast defense. It is also claimed that much of the shipping from northern Europe, notably Hamburg, Antwerp, etc., would choose this route to the west, thus avoiding the boisterous English Channel and the still stormier route in certain seasons via the north of Scotland. It would also furnish Edinburgh, at the port of Leith, a direct shipping communication to the United States without reshipment at Glasgow.

It is sufficient, however, at present to say that the matter is still a project, and has not yet obtained even the uncertain recognition of probability.

BRITISH HIGHWAYS.¹

It is impossible in a report like this to present a survey of the highways of Great Britain, or to give a detailed statement of the method of their construction.

Construction.—Many of them were designed and built by the Romans, and, as far as I can learn, nearly all of the existing national roads were designed and constructed before the commencement of the present century.

The systems on which these roads were constructed all involved the preparation of the ground, according to the character of the soil on which the road was built. Pounding the soil to make it firm, driving in piles, or laying on planks or logs crosswise if the soil was boggy, or sometimes placing large rocks, were the usual way of preparing the substratum. This being done, a bed of concrete from 6 to 10 inches thick or large blocks of stone were carefully and compactly laid to form what was called the subroad, over which was placed the road proper, which was composed of either prepared slabs or blocks of stone, broken stone, or gravel and sand.

About a century ago, John Loudan Macadam inaugurated a new system of road making and repairing, to explain which I can do no better than insert here an article, which I find is taken from the evidence of Macadam before a committee of Parliament in 1839:

Macadam's plan of road making differed as much from the old way which he found in operation as a bridge does from a ford. Instead of going deep for a "bottoming," he worked solely on the top. Instead of producing a peaked, roof-like mass of rough, soft rubbish, he got a flat, smooth, and solid surface. In lieu of a road 4½ feet through, he made one of at most 10 inches in thickness; and for rocks and

¹ From Special Consular Reports "Streets and Highways."

boulders he substituted stone broken small. His leading principle was that a road ought to be considered as an artificial flooring, so strong and even as to let the heaviest vehicle pass over it without impediment. Then people began to hear with wonder of roads 30 and 40 feet wide rising only 3 inches in the center, and he propounded the extraordinary herey that a better and more lasting road could be made over the naked surface of a morass than over solid rock. Another of his easy first principles was that the native soil was more resistant when dry than when wet, and that, as in reality it had to carry not alone the traffic but the road also, it ought to be kept in a condition of the greatest resistance; that the best way of keeping it dry was to put over it a covering impervious to rain—the road, in fact; and that the thickness of this covering was to be regulated solely in its relation to its imperviousness, and not at all as to its bearing of weights, to which the native soil was quite equal. Instead of digging a trench, therefore, to do away with the surface of the native soil, he carefully respected it, and raised the road sufficiently above it to let the water run off. Impermeability he obtained by the practical discovery that stones broken small and shaken and pressed together, as by the traffic on a road, rapidly settled down face to face and angle with angle, and made as close a mass as a wall. Mankind now believe that this last is all that Macadam invented; the rest is forgotten. That important fraction of his discoveries is what has given to us the verb to macadamize (“to pave a road with a small broken stones.”—Skeat).

Tollgates.—The roads in England were until recently under the control and management of certain bodies called turnpike trusts or trustees, who were usually appointed by acts of Parliament applying to separate and distinct districts. Under these acts the turnpike trustees were authorized to collect from the drivers of all vehicles or from persons traveling on horseback small sums which were called tolls. These tolls were collected in the highroads at various points at a toll-house, being a small two-roomed cottage erected close up to the road, where a tollgate was fixed. This gate was a five-barred gate which was kept locked, and opened for each passenger on payment of the toll.

These tollhouses would in some districts be from 4 to 5 miles apart, and in others would be within much shorter distances, as the traveler happened to get on the roads governed by different trustees. These tolls were, for a two-wheeled vehicle, generally about 6 cents each, and for a horseman 2 cents or 3 cents. Each person paying the toll received a small ticket marking the toll, and the toll paid in some instances freeing the passenger for a gate farther on the road. In some districts tolls were very much higher than in others.

These turnpike trusts were done away with by an act of Parliament passed in 1878, known as the highways amendment act (41 and 42 Vict., c. 77), after which the old tollhouses gradually disappeared.

HIGHWAYS IN THE LIVERPOOL DISTRICT.

I am informed that some of the country roads in the vicinity of Liverpool have only the natural foundation, which means no foundation at all, are poorly drained, and have been much neglected, but are now being more carefully treated. Such roads, however, are rarely seen, and in the main the roads are thoroughly made and maintained in good condition. There is but little of the common “dirt road,” and this is

made here as everywhere else of the material nearest at hand, the expense being entirely for labor. In the vicinity of works and mines where the traffic is heavy, more care is taken, and granite is brought by rail for repairing. Where the traffic is lighter, the local stone, whatever it may be, is used. In some localities, slag and other refuse from works and mines are largely used for country roads and for streets in towns. Such cheap roads being the exception, it is difficult here, where macadam is almost universally adopted, to draw the line between city streets and country roads.

In Carnarvonshire, Wales, the best roads have a hand-set pavement for a foundation (the ground first of all being well drained), covered with about 6 inches of "metaling" (stone) broken to a 2-inch gauge.

In the Wavertree district, near Liverpool, macadamized roads are preferred.

HIGHWAYS IN THE ENGLISH MIDDLE COUNTIES.

The beautiful country roads now in use, for which these middle counties of England are so worthily famous, were, with the exception of the few roads built since 1878, made by the turnpike trusts under special acts of Parliament, the first of which was passed in 1762. The different districts of the country, having been divided into sections or divisions, each several section was placed in the hands of trustees, separate and distinct acts of Parliament being required for each of said sections. These trustees levied tolls on all traffic passing over the roads under their control; the amount of toll demanded, per horse, cart, wagon, etc., varied from time to time, according to the distance traveled between the toll gates and the amount expended in building and maintaining the roads. In some instances the trustees, finding the revenue from their roads inadequate to meet the outlay, delegated, or contracted out, to private individuals, the collection of the tolls. These individuals, having guaranteed the necessary amount to the trustees and depending for their reimbursement on the tolls, looked very sharply after the just and full collection of the same.

Under these trusts many of the old lanes and wagon tracks, by the proper use and periodic application of hard broken stones (obtained from the adjoining counties) to the ruts and holes caused by continued travel, have attained a condition equal to the highways running through the country. To the good judgment and judicious care of these trusts is due the present almost perfect condition of the main or country roads of England. Many years, however, of untiring labor have been required to accomplish such results.

These trusts, however, were abolished in this (Tunstal) district about the year 1878. From that date to the year 1888 the roads were under the control of, and maintenance of the same devolved upon, the local authorities.

HIGHWAYS IN SCOTLAND.

The country road system of Scotland may be regarded as a growth to meet the wants of the public and as a result of experience in carefully providing for the public needs, by studying the best methods, its present state of excellence, approaching perfection, not having always existed, though for scores of years Scotland, even in the Highlands, has been famous for her good roads.

A hundred years ago, the population in some districts was already becoming quite dense, and the need of good roads and how to build them naturally commanded the attention of the public and officials. Sixty years ago, and before the country was interwoven with a network of railways and when traffic and travel were already considerable on the great stage routes to London, as well as to other leading centers, good roads were more than a luxury; they became a necessity, and required to be perfected and kept up at any cost. What wonder, then, that the roads now are in excellent condition everywhere.

Comparatively few roads are now being built, because not needed, but the old ones are constantly being improved by cutting down high grades, filling in the low places, renewing the top dressing, etc.

A considerable force of men is kept constantly employed improving and repairing the roads, the counties or shires, for road purposes, being divided into divisions, these being subdivided into districts, the latter embracing from 15 to 30 or more miles of road. The districts are in turn subdivided into sections, upon which squads of men, from three to six in number, according to the needs of the road, are kept at work the year round.

A heavy steam roller, 10 to 15 tons, plays an important part in road repairing as well as road making, and though of comparatively recent introduction is now regarded as essential, the larger, or 15-ton roller, being considered the better and more economical. One roller, with its complement of men, does its part of the work upon several of the above-described sections.

Macadamized roads.—Macadamization, or the process of covering roads with broken stone, came into use in Scotland early in the present century. Excellent roads were formed by placing in a suitably prepared road layers of broken granite or other hard stone, which became hardened into a solid mass by the traffic passing over them.

Midlothian roads.—Edinburghshire, or, as otherwise named, the county of Midlothian, occupies an area of 358 square miles, or 229,120 acres. This area, in the management of its roads, is divided into four districts, namely, the Edinburgh suburban, the Lasswade, the Calder, and the Galawater districts, each having its board of road trustees, under whose care the roads in the respective districts are maintained and who control the expenditure required upon them.

In the county, there have been two methods used in making and maintaining its roads or highways, viz, those of Telford and of Macadam. Briefly stated, the Telford system consisted of a bottoming of large wedge-shaped stones set on end, sharp edges uppermost, with a covering of broken "metal" (stones) on the top. That of Macadam consists of a bed of metal broken to a uniform size from top to bottom. The latter system has been adopted throughout the county of Edinburgh for many years past, and on account of its giving a smoother surface to the road is considered preferable to the Telford system. It is preferred also as avoiding the risk of the large bottoming stones used in the Telford system working up to the top, which, it is said, happens in nearly all roads having pitched or paved foundations. The first cost of macadamizing a road is usually from 60 cents to 70 cents per superficial square yard.

The main lines of roadway throughout the county of Edinburgh are from 25 to 30 feet wide from fence to fence, the greater width being required for roads of much traffic or near the city; and under the roads and bridges act of the year 1878 it is ordained that no erection shall be built more than 7 feet high within 25 feet of the center of the roadway. The old parish roads in the county, however, are often not more than 15 feet wide, but these are frequently being made wider where greater traffic or other circumstances require the improvement. The roadways are maintained with whinstone procured in the neighborhood, broken to a uniform size of $2\frac{1}{2}$ inches, and applied according to the amount of traffic.

HIGHWAYS IN IRELAND.

The materials employed for the construction and maintenance of roads in this country are broken stones and gravel—chiefly depending upon whether the roads are in a stone or gravel district. For roads subject to heavy traffic, broken stone metaling is essential, laid on a pavement of stones set on edge closely together, the top interstices being filled with "spawls," so as to provide a firm foundation for the metaling. Round stones, such as are found in coarse gravel, should not be used, as they invariably yield to lateral pressure; therefore bottoming should be done with quarry stones or natural bowlders broken to a suitable size, so that the natural rounded surfaces are not in contact with the pavement. The strength of the road crust must be determined by the engineer according to the nature and amount of the traffic to be provided for.

The steam roller for the consolidation of the metaling of newly-coated roads is a recent economic improvement. The road metaling is consolidated at once, a smooth, firm surface is provided, and the broken stones are pressed in their original angular condition.

BRITISH OCEAN LINES.

The Department having failed to receive any reports from Liverpool, London, or Southampton, the following information concerning ocean lines sailing from those ports is taken from the London Shipping Gazette and Lloyd's List, and the Glasgow Herald:

LIVERPOOL.

American Line.—United States mail steamers; Liverpool to Philadelphia, weekly. See this line under Southampton for further particulars.

Bibby Line.—For Rangoon and Colombo, via Marseilles. Takes goods at through freight for Indian coast ports, transshipments at Colombo, and for Burmese ports, transshipments at Rangoon. First-class vessels and accommodations. Head office (Bibby Bros.), 26 Chapel street, Liverpool.

White Star Line.—For New York, San Francisco, and Australia. The steamships of this line are represented as first class both for passengers and freight. Ismay, Imbrie & Co., agents, 10 Water street, Liverpool.

Atlas Line.—For West Indies, Colombia, and Costa Rica. The mail steamers of this line also sail from New York to Colombia and Costa Rica weekly, and from New York to Haiti fortnightly. Leech, Harrison, & Forwood, agents, Liverpool.

McIvor & Nelson Line.—For Montevideo, Buenos Ayres, and Rosario For freight or passage apply to David McIvor & Co., Liverpool.

Booth Line.—The steamers of this line sail from Liverpool to Para, Manaos, Maranh, and Ceara. For freight and passage apply to Alfred Booth & Co., 14 Castle street, Liverpool.

Macandrew Line.—To Spain from Liverpool, London, and Glasgow. Regular line of screw steamers to all ports in Spain. For freight and passage, apply to the agents, Robert Macandrew & Co., Suffolk House, Laurence Pountney Hill, London, E. C.; Macandrew & Co., 5 Chapel street, Liverpool; or to J. & A. Roxburgh, 3 Royal Exchange Square, Glasgow.

Swedish Line.—Liverpool to Gothenburg. Regular line of Swedish steamers, taking goods at through rates to Halmstad, Helsingborg, Landskrona, Malmo, Ystad, Carlshamn, Carlskrona, Calmar, Norrkoping, and Stockholm. For freight or passage, apply to Messrs. Tegner, Price & Co., 107 Fenchurch street, London, E. C., or to Bahr, Behrend & Ross, Old Castle Buildings, Preeson's row, Liverpool, and at 75 Piccadilly, Manchester.

McIlraith, McEacharn & Co., Limited.—To Australasia, Africa, and America; Adelaide, Sydney, Melbourne, Newcastle, Wellington, Dunedin, Wellington, Auckland, and Lyttleton; Mauritius; Victoria, Vancouver City, and Seattle. For freight or passage, apply to Gracie, Beazley & Co., 25 Water street, Liverpool.

Houlder Bros. Line.—For Australia: Adelaide, Melbourne, and Sydney. Houlder Bros., 14 Water street, Liverpool.

Cunard Line.—Royal mail steamers from Liverpool to New York and Boston. Accommodation for first and second class passengers. Steerage passengers to all parts of America and Canada; those by Boston steamers booked to New York without extra charge. Regular line of cargo steamers from Liverpool to Mediterranean ports. For freight, etc., apply to the Cunard Steamship Company, Limited, 30 Jamaica street, Glasgow.

Pacific Line.—Royal mail steamers, Liverpool to Pernambuco, Bahia, Rio Janeiro, Montevideo (Buenos Ayres and Rosario), Valparaiso, and all ports on the west coast of South America, calling at La Pallice (La Rochelle), Corunna, Vigo, Leixoes (Oporto), and Lisbon. Accommodation for passengers. Extra service of fast cargo steamers to Chilean and Peruvian ports without transshipment. Apply to the Pacific Steam Navigation Company, Liverpool, or to James Dunn & Sons, 107 St. Vincent street, Glasgow.

Anchor Line.—From Liverpool to Bombay, Kurrachee (cargo for Kurrachee transshipped at Bombay), and Calcutta direct. Henderson Bros., 47 Union street, Glasgow.

Johnson Line.—Liverpool to Baltimore. Freight boats.

Leyland Line.—Liverpool to Boston. Freight service. Average time of passage, ten days.

Mississippi and Dominion Steamship Company.—Liverpool to Portland. Fortnightly service. Steamships and their gross tonnage: *Vancouver*, 5,231; *Labrador*, 4,737; *Oregon*, 3,672; *Sarnia*, 3,691; *Toronto*, 3,316; *Dominion*, 3,176; *Ontario*, 3,175.

Chesapeake and Ohio Steamship Company.—Liverpool and London to Newport News. Freight service. Time of passage, twelve to fourteen days.

West India and Pacific Steamship Company.—From Liverpool to New Orleans. Five times a month during winter months, and three times a month during summer months. Passenger and freight service.

LONDON.

Orient Line.—Australia, New Zealand, and Tasmania. Fortnightly mail service from London (Plymouth one day later, Naples nine days later), for Albany, Adelaide, Melbourne, and Sydney, with Her Majesty's mails, calling at Colombo, and taking passengers for all ports in Australasia. Passengers leaving seven days after steamers leave London, and traveling overland, can overtake the steamer at Naples. Loading berth, Tilbury docks. Managers, F. Green & Co., and Anderson, Anderson & Co. Head offices, Fenchurch avenue, London. For passage, apply to the latter firm at 5 Fenchurch avenue, E. C., or to the branch office, 16 Cockspur street, Charing Cross, S. W.

McIlwraith, McEacharn & Co., Limited.—To Australia. (For particulars, see same company under Liverpool.) McIlwraith, McEacharn & Co., Limited, 3 and 4 Lime Street Square, London, E. C.

Peninsular and Oriental Steam Navigation Company.—London to Bombay and Kurrachee; Calcutta and Ceylon; Adelaide, Melbourne, and Sydney, connecting with China, Straits Settlements, and Japan. This line carries the British mails. For passage and freight, apply at 122 Leadenhall street, and 25 Cockspur street, London, S. W. Freight brokers, Escombe Bros., Liverpool, Manchester, Southampton, Glasgow, and London. Parcels 4d. per pound.

Bibby Line.—London and Liverpool to Rangoon and Colombo, via Marseilles. Taking goods at through rates for Indian coast ports, transshipment at Colombo, and for Burmese ports, with transshipment at Rangoon. Fast mail steamers, built by Harland & Wolff, of Belfast. For freight or passage, apply to Simpson, Howden & Co., 1 Princess street, Manchester; William Jeffrey & Co., 7 Royal Bank place, Glasgow; C. Howard & Sons, 45 Leadenhall street; Alexander Howden & Co., 138 Leadenhall street, London, E. C.; or to the owners, Bibby Bros. & Co., 26 Chapel street, Liverpool.

New Zealand Shipping Company.—For New Zealand, Australia, Cape Town, and Teneriffe. Royal mail steamers. Monthly sailings from London, Plymouth two days later. Apply to Gray, Dawes & Co., 4 Pall Mall East, S. W., or to J. B. Westray & Co., 138 Leadenhall street, E. C.

Castle Line.—Cape and Natal mails. Weekly service for the gold fields of South Africa. The Castle Company's steamers leave London (East India dock basin) every Friday, and sail from Southampton every Saturday, calling at Madeira, Canaries, Madagascar, and Mauritius. Return tickets to all ports. Free tickets by Castle express from Waterloo to Southampton. Apply to Donald Currie & Co., 3 Fenchurch street, London, E. C., and 40 St. Enoch Square, Glasgow.

Aberdeen Line.—London to Australia, via Cape of Good Hope, in forty-two days. These full-powered steamers sail for Melbourne and Sydney, taking passengers for all Australian and New Zealand ports. Fares, saloon, from £50 (\$243.30); cheap third-class fares. Apply to the owners, George Thompson & Co., 24 Leadenhall street, London, E. C.

New Zealand Shipping Company.—Teneriffe, Cape Town, Tasmania, Australia, via Hobart, and New Zealand. Monthly service. Apply to J. B. Westray & Co., 138 Leadenhall street, London, E. C.; in Glasgow to M. Buchanan, 75 Buchanan street; D. S. Mitchell, 178 Broomielaw; G. Smith, 21 Hope street, and to Turnbull, Martin & Co., 8 Gordon street; or in Greenock, to A. Picken & Co., Arcade.

Peninsular and Oriental Company.—Carrying mails to India, China, Australia. For Bombay and Kurrachee, from London and Brindisi every week. For Calcutta and Ceylon semimonthly. For China, Straits, and Japan, from London every fortnight and from Brindisi every alternate Sunday evening. For Australia, New Zealand, and Tasmania, carrying Her Majesty's mails, leave London for Sydney, Melbourne, Adelaide, and Albany direct, calling at Brindisi, every fortnight; cheap single and return tickets; first and second saloon passengers

only carried; fares, £35 to £70 (\$170.31 to \$340.62). For Mediterranean and Egypt, from London to Gibraltar, Malta, Port Said, and Ismailia weekly; from Brindisi to Port Said and Ismailia weekly. The Peninsular and Oriental Company issue return tickets at low rates to India, Ceylon, China, Australia, Tasmania, New Zealand, Gibraltar, Malta, Brindisi, and Egypt, and round-the-world tickets at reduced rates. For freight or passage, apply at the company's offices, 122 Leadenhall street, London, E. C., or to Escombe Bros. & Co., 51 St. Vincent street, Glasgow; or for passage only to T. Cook & Son, 83 Buchanan street, Glasgow, or T. O. Hunter & Co., 13 Hamilton street, Greenock.

Macandrew Line.—For Spain. (For particulars, see this line under Liverpool.)

The Anglo-Australasian Steam Navigation Company, Limited.—The steamers of this line leave for Adelaide, Melbourne, and Sydney, from the Victoria docks. For freight or passage, apply to the managers, William Milburn & Co., Queen street, Newcastle on Tyne, and 2, 3 and 4 Billiter avenue, London, E. C.

Aberdeen Line.—London to Australia, via Cape of Good Hope, in forty-two days. These steamers sail for Melbourne and Sydney, taking passengers for Teneriffe and Cape Town and for all Australian and New Zealand ports. For fares and full particulars, apply to the owners, George Thompson & Co., 24 Leadenhall street, E. C., or to the West End agents, Sewell & Crowther, 18 Cockspur street, Charing Cross.

Shaw, Savill & Albion Company.—For New Zealand, Tasmania, Australia, calling at Teneriffe and Cape Town outward and Rio and Teneriffe homeward. Shaw, Savill, and Albion Company, Limited, dispatch their royal mail steamers from London (Royal Albert dock) every four weeks, leaving Plymouth two days later. Passengers conveyed to Teneriffe and the Cape. Cheap rates, single and return. Round-the-world tours. Apply to Shaw, Savill and Albion Company, Limited, 34 Leadenhall street, E. C.; or 51 Pall Mall, S. W. Continental freight agent, August Blumenthal, Hamburg, Antwerp, and Rotterdam.

Houlder Bro's Line.—Australia, River Plate, etc. Houlder Bros. & Co.'s regular line of steamers for Adelaide, Melbourne, and Sydney; Montevideo, Buenos Ayres, and Rosario, calling at Las Palmas; Cape Town, Algoa Bay, Natal, Mauritius, etc. Houlder Bros. & Co., 146 Leadenhall street, London, and at 372 Ouyo, Buenos Ayres.

National Line.—To New York, weekly. Special accommodations for conveyance of horses and live stock. The National Steamship Company, Limited, offices, 44 and 45 Leadenhall street, E. C.

(The report of the United States Commissioner of Navigation for 1894 says of the National Line: This is the pioneer line in carrying across the Atlantic meat in refrigerators and live stock.)

Red Cross Line.—London to Moscow, via St. Petersburg, in conjunction with the Grand Russian Railway Company. Departures every few days by the steamers of the Red Cross Line. Loading berth Mill-

wall docks. Apply in St. Petersburg to Alfred Henley & Co.; in Moscow to Prollius & Wirekau; in London to C. M. Norwood & Co., 21 Billiter street, or to J. D. Hewett & Co., 101 Leadenhall street.

Wilson-Hill Line.—Service, chiefly freight, from London to New York, about every week, according to the conditions of trade.

Atlantic Transport Line.—Weekly passenger transport service, London to New York, Baltimore, and Philadelphia.

Furness Line.—London to St. John, New Brunswick, touching at Halifax. Four steamers of 1,400 tons each, fitted for freight and passengers; are well equipped and in good condition. (Report of American consul at St. John, New Brunswick.)

SOUTHAMPTON.

American Line.—United States mail steamers, Southampton to New York direct every Saturday. Liverpool, Philadelphia service, every Wednesday. Apply to Richardson, Spence & Co., Southampton or Liverpool; or A. Malcolm, 40 St. Enoch Square; Thomas Cook & Son, 83 Buchanan street, and M. Buchanan, 75 Buchanan street, Glasgow.

North German Lloyd Line.—The steamers of this line leave Southampton for New York direct on Wednesdays. Average passage, seven and a half days. Special train from Waterloo station on morning of sailing. Reduced cabin rates through from London.

Mail service from Southampton, taking passengers for Egypt, Aden, Colombo, Adelaide, Melbourne, Sydney, Tasmania, and New Zealand. These steamers offer accommodation to first and second class passengers; also third-class fares, outward and homeward.

Apply to Keller, Wallis & Co., 32 Cockspur street, Charing Cross; 65, 66, and 67 Gracechurch street, London; and at Manchester and Southampton (telegrams, Tuetonic, London); or Phillipps & Graves, Botolph House, Eastcheap, E. C.

Royal Mail Steam Packet Company.—To Brazil and River Plate, West Indies, California, and British Columbia, from Southampton, as under: On every alternate Friday to Vigo, Lisbon, Pernambuco, Bahia, Rio de Janeiro, Montevideo, and Buenos Ayres; also, every fourth Friday to St. Vincent and Maceio. On every alternate Wednesday for the West Indies, Pacific, California, British Columbia, etc. A steamer also leaves London every four weeks for Barbados, Trinidad, Grenada, St. Lucia, Jamaica, Savanilla, Carthagena, Colon, Limon, and Greytown. Full particulars can be had on application at the company's offices, Southampton; Alexander A. Laird & Co., 52 Robertson street, Glasgow; or to J. M. Lloyd, secretary, Royal Mail Steam Packet Company, 18 Moor-gate street, London, or 29 Cockspur street, S. W.

Union Line.—Mail steamers to gold fields of South Africa, Natal and East Africa, Madeira and Teneriffe. Departures from Southampton every Saturday. Union Line express from Waterloo every Saturday. Free railway tickets from London to Southampton. Goods collected daily in Glasgow by Clyde Shipping Company for transshipment at

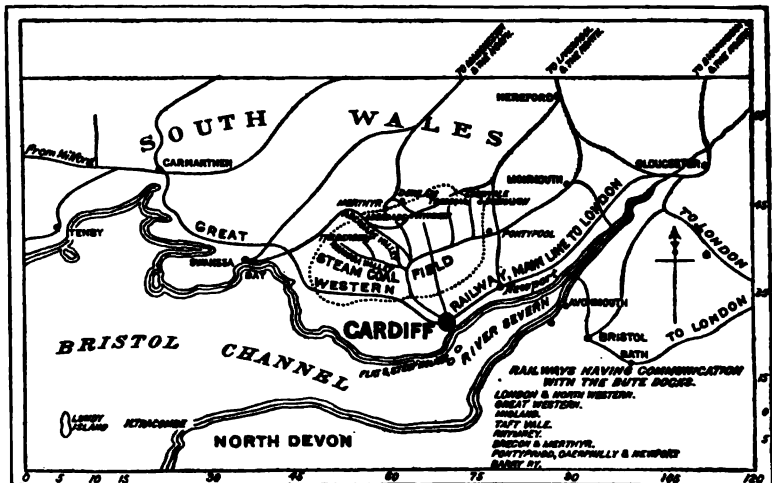
Southampton. Apply to Union Steamship Company, Limited, Southampton, and South African House, 94 to 96 Bishopsgate street, Within, London, E. C.; or to F. W. Allan & Co., 125 Buchanan street, Glasgow.

For ocean lines of Scotland and Ireland see reports from Glasgow and Belfast.

WALES.

WELSH COAL FIELDS.

The extensive development of the vast mineral wealth of the South Wales coal district, whose numerous little valleys have, for the most part, been robbed of their Arcadian simplicity and transformed into veritable beehives of industry, is responsible for the creation of most of its highways of commerce; therefore, introductory references to the



Map showing the relation of Cardiff to the Welsh coal field, its railway communication with the midlands and its maritime position.

natural features of the most important part of the principality of Wales are essential to a due appreciation thereof; and this will doubtless be enhanced by the outline map showing its maritime position. That development, during a comparatively recent period, has, in spite of universal depression of trade, been of quite a phenomenal character, as may be seen from the fact that, since the year 1875, the tonnage of vessels cleared at the port of Cardiff, the metropolis of South Wales, has actually trebled, and placed the port a good third in the United Kingdom for shipping cleared, and the first port in, probably, the entire world for the shipment of coal. The tonnage of vessels cleared in 1893 was no less than 7,123,602, the coal exports being 10,000,000 tons; and so great is the demand for Welsh steam coal that, in all probability, the figures will increase for many years to come. Huge docks are about to be added to those already in existence with a view

to meet the enlarged demand from foreign countries, while local railway facilities are being improved on every hand.

A glance at the map of the coal field will disclose the fact that its nearness to the Bristol Channel admits of the coal being speedily shipped ready for transport across the sea, and that the railway communication with London, Liverpool, and the other populous centers of the country by means of the three principal trunk lines of the Kingdom, viz, the Great Western, the London and Northwestern, and the Midland systems, respectively, indicate an enormous railway traffic. Coal, steel, and tin are widely distributed in this way, Liverpool, for instance, shipping a large quantity of Welsh coal for export and bunker purposes, to say nothing of steel rails and tin plates. Hence, from a commercial point of view, the industries of South Wales are of peculiar interest, and no report on the highways of commerce pertaining to this district would be complete without special attention being called to the country's characteristics.

The area of the South Wales coal field is 906 square miles, and it resembles in shape a pear, the basin of one coal field (which, by the way, is claimed to be the most perfect in the world) having its center near a town called Pont-y-Pridd, a dozen miles from Cardiff. Along the coast, beginning at Newport, the docks there and those at Cardiff and Swansea, together with those of several smaller ports, are within easy reach, and all engage more or less in the shipment of coal. The import trade, on the other hand, is insignificant, because hitherto Welsh capitalists have been kept so busy by their coal that they have not been able to devote attention to imports; yet there is much said and written, locally, about developing these at Cardiff in the near future.

The coal field is served by a number of competing lines, and every year large sums of money are sunk in Parliamentary warfare on the part of those who either promote or oppose new schemes of railway extension, the jealousy of rival proprietary interests being brought to bear against any and every scheme brought forward. So that South Wales is an El Dorado to lawyers as well as mine operators.

OCEAN LINES.

Notwithstanding the large export trade of the South Wales ports, Swansea stands alone in having an ocean line providing regular communication with New York and Baltimore, for no other Welsh port has any established ocean line. Speaking generally, the greater portion of the vessels plying between Cardiff and elsewhere are ocean tramps, dependent upon the agents of their owners for chartering, because from no part of the world can return cargoes be obtained in sufficient quantities to allow of regular communication. Exceptions in one or two respects to the general rule are to be found, as in the case, for instance, of the iron-ore trade with Spain. The era of Bessemer and Siemens steel making abolished the use of native ore for the manufacture of iron, so within the past twenty years a considerable trade has sprung up between Cardiff and certain Spanish ports, notably Bilbao, and vessels arriving

with ore take out, as a rule, coal for one or other of the French ports on their way back to Spain, or, on the other hand, boats are chartered in France to run to Spain for a cargo of ore to be brought here. Frequent communication with Mediterranean ports takes place in the case of many vessels, for the simple reason that the mine operator, shipper, and shipowner are represented in the same corporation, and oftentimes these "coalers" run to the same point; but speaking generally, nothing is so regular as the irregularity of the trips run.

I may here add that what bids fair to become an important enterprise is being initiated by a local firm, who intend putting on a fleet of ten steamboats to ply between Odessa and Rotterdam with grain, and thence to Cardiff with general cargoes; and it is hoped that the Midlands will be extensively tapped for the outward-bound voyages from Cardiff.

The establishment of a line of steamers about twenty years ago between Cardiff and New York was not successful; but in the meantime Cardiff has more than doubled itself, and facilities for sending American produce inland have been immensely improved, and it is claimed that rates quoted by the railway companies having local connections are such as to enable an importation of American produce to be carried on with profit. When a similar enterprise is again started, as I have no doubt will be the case sooner or later, the efforts to establish a trade will be more vigorous, and will consequently command better results.

A company is being formed to promote a new Anglo-Canadian service, as it is called, and a Mr. James Huddard, the managing director of that company, has been instituting inquiries respecting facilities for a new and direct route to Canada; also to Australia, India, Japan, etc. He has visited Milford Haven already, and has selected it as one of the ports on the English side from which the final choice of a point of departure will be made. It appears that Mr. Huddard, Mr. Colman, C. M. G., secretary for Canada in England, and all forming the party of inspection, were favorably impressed with the advantages of that port. A deputation from Cardiff afterwards saw Mr. Huddard and pointed out to him the immense saving in the matter of the bunker coal available at Cardiff, which port was also shown to be excellently situated as a distributing center for the populous South Wales mineral district, and in having means of ready communication with the Midlands and London. Cardiff is already within three and three-quarters hours of London, and for the purposes of a large transatlantic passenger traffic, the time might be reduced to three and one-half hours. A deep sea-water entrance would necessarily have to be made should Cardiff be chosen; but as the Bute interests are anxious to have the new ships enter their docks here the work would certainly be accomplished within the period of eighteen months which will be occupied in building the ships.

The coastwise traffic is not very considerable, and is somewhat irregular; daily trips, however, are run to Bristol for both passengers and

freight, and a number of pleasure boats make frequent runs in the channel. The most ambitious scheme affecting Cardiff is the formation of a harbor trust, which has been in contemplation for several years past. A committee, appointed by the city to specially investigate the subject, presented an exhaustive report early this year in favor of the project. The committee are now asking for authority to engage experts to examine the books of the various companies to be dealt with, and to report upon the earnings, etc., the desire of the city corporation being to acquire not only the dock and the adjacent properties, but also to possess themselves of a large area of vacant land in the vicinity which would become very valuable as sites of factories and houses in close proximity to the docks. The great object in view is the floating of the natural harbor, and no place better suited for a great port can be found on this coast line; for, besides the water, there are here good shelter and the cheapest fuel. One consideration, and that by no means the least important, is that if the harbor were floated Cardiff would become a competitor for the Atlantic traffic, its geographical position being better than that of Liverpool or Southampton, and its proximity to the coal field giving it a great advantage over Milford Haven.

RAILWAYS.

The coast line is skirted by the Great Western Railway, the largest in the country, so far as mileage is concerned, and it has, consequently, the lion's share of the general traffic, because of being in communication with all of the ports of the Bristol Channel, besides affording the most direct route to London. The Great Western has thus practically a monopoly in dealing with the traffic between the ports and London, and absolutely so in respect of passengers, it being generally accepted as a fact that the returns from the Cardiff depot are larger than from any other station on the system, with the exception of Paddington (London). The distance between Cardiff and London, via the Severn Tunnel is 156½ miles; and via Gloucester, 170 miles, the greater portion of the freight, as well as much of the passenger traffic, being carried along the latter route. The line touches the South Wales district at Newport, 12 miles nearer London than is Cardiff, and the South Wales branch proceeds by way of the other ports to Milford Haven, its terminus, which is a distance of 271 miles from London by the nearer route.

At Newport, a branch runs to Pontypool Junction, 8 miles distant, and here subsidiary branches run in various districts to the western valleys of the coal fields; junctions being formed also with lines in the eastern valleys, the heads of which are generally at a distance of about 20 miles from Newport or Cardiff.

The Great Western does not differ from any of the other railways in being beyond praise, so far as the condition of the tracks is concerned, for it must be conceded that the greatest care appears to be taken for the safety of life and limb, with the result that the number of fatalities on the railways is comparatively small. The lines are invariably fenced in and have scarcely any grade-level crossings, the board of trade regu-

lations making it incumbent to avoid such wherever possible. Depots are, in all cases, inclosed, and even the smaller places have two platforms, the larger depots having more than that number. At Cardiff, there are three depots, and owing to the large volume of traffic the Great Western station is about being enlarged at a cost of £150,000 (\$729,900). The tracks are all 56½ inches gauge, with an intervening space of 6 feet, and they are well ballasted with cinder (obtained from the steel works in the district) or limestone to a depth of about 18 inches. The rails used on the Great Western system are of a heavy section (double-head), weighing 94 pounds per yard, each rail being 32 feet in length, while the London and Northwestern Railway's rails are 30 feet in length, and are of a "bull-head" section, weighing 96 pounds per yard. (These figures do not apply to the bridge rails, which are considerably heavier.)

The double-head rail finds most favor among the railways generally because the "bull-head" will not allow of its being turned upside down when the upper crown has been worn thin. The bridge rail, I may add, is a hollowed enlargement of the T-head rail (which latter is rarely used here), the bridge rail having thus a different section to allow of its being laid on longitudinal sleepers. The sleepers are invariably creosoted, and ordinarily are placed about 3 feet from center to center, each having fixed upon its surface at both ends a "chair" fastened thereto by spikes and wood screws. The rail passes through the chair and bears against the inside end of the open seat, an oaken key slightly tapered being used as a wedge and driven home by a hand hammer on the outer side. Every morning, at 6 o'clock in the summer and an hour later in the winter, the gauger walks his "length," viz, the section of the line under his control, to see that the wedge keys are tight, and that his section is in perfect condition generally. At depots and junctions he has also the care of the switch points.

On all tracks along which passengers or through freights are conveyed, the points are attached to signal cabins, and are connected with an interlocking system which must be approved by the inspector appointed by the board of trade before any line can be opened for traffic. Not only have the facing points to be interlocked with the signals, but each pair of points has a crossbar connection with two nearly center holes, into one of which a plunger, measuring a couple of inches in diameter, enters, and thus insures the closing of the corresponding tongue before the lever attached to the semaphore signal can be moved and the signal thus pulled off; nor can the switch be turned between the wheels of engines or cars, even should the pointsman or signalman err in putting the signal on and attempt to pull the plunger by mistake, there being attached to it a flat bar arrangement, over which the flange of one or other of the wheels is passing until the last has cleared. The interlocking system in vogue on the Great Western Railway is known as Saxby & Farmer's patent, the firm bearing that name being responsible by contract for the fitting of same; another well-known firm of

manufacturers of railway-interlocking apparatus being Holland & Mackenzie. The London and Northwestern Railway Company have a system of their own patented, as are their locomotives, by Mr. Webb, their chief engineer.

The track of all railways is doubled, with the exception of some of the short and subsidiary lines, on which the tablet system is in vogue in place of the old plan of "staff and ticket." Formerly a train proceeding on a single line would be authorized to do so by either the staff or a ticket obtained by the pointsman or signalman from a box which could be unlocked only by the staff; and when the latter was out no train could proceed in the direction controlled by the staff until its return. Apart from the serious delays often occasioned by the staff being at the wrong end of the section, the man could take out a ticket whenever he pleased; hence the tablet system is made compulsory, because he can not, of his own accord, release a tablet from the locker apparatus in which it is kept until the man in advance empowers him to do so by giving "line clear" on the electrical indicator and pressing a knob which allows of a tablet being abstracted. The line is then "blocked," and "line clear" can not be repeated until the tablet has reached its destination and been placed in position, so that a collision is rendered impossible.

The Great Western through freight trains are frequent, but only one through train of passenger cars is run to London via the Severn tunnel, and seven via Gloucester during the day. This service is said to be inadequate, and several public meetings have been held in certain towns affected in favor of a proposed new line which, it is claimed, would bring London 30 or 40 miles nearer and destroy the monopoly which now exists. Passenger cars usually have five compartments, each of which has two seats accommodating ten persons, and although there has been marked improvement within recent years, the comfort of traveling is much less than is afforded by the cars in the United States. Most of the trains are devoid of lavatories (for the use of which conveniences at the stations 2 cents is charged) the exceptions being the through Scotch, Irish, and London express trains, whereon great improvements have recently been effected, including the introduction of the Pullman sleeper.

Passenger rates.—The passenger rates are uniform according to mileage except where competitive traffic obtains; as, for instance, in traveling from Cardiff to London, the fare is the same on the London and Northwestern Railway as on the Great Western Railway, although the former route is one-third longer; and the same rule holds good respecting freights. The first-class passenger fares are $4\frac{1}{2}$ cents per mile; second class, $3\frac{1}{2}$ cents, and third class, 2 cents by act of Parliament for at least one train daily. Thus the fare is termed the parliamentary one, the difference imposed by the other trains being a few pence more on each ticket. The latest intelligence is to the effect that the third-class fare is to be abolished on the Great Western Railway, so that only parlia-

mentary fares will be charged, and doubtless other systems will follow suit.

Freight rates.—The freights are arranged in classes, a revision of the maximum charges having recently been made by the board of trade, the authority charged with the enforcement of the stringent railway and canal laws. Freights are carried in variously designed cars, denominated “wagons” and “trucks,” of a capacity of from 8 to 10 tons and having four wheels only, the cars used for the conveyance of coal being almost invariably owned by either the operators or the shippers, the same remark applying to iron and steel manufactures. The tariff rate on coal from the mines to the Cardiff docks is 0.875 of a penny, equal to $1\frac{3}{4}$ cents per ton, and the average haul of same is 20 miles. All rates are charged per ton, and parcels under 500 pounds in weight are proportionately dearer. The general goods rates from Cardiff to London—distance, $156\frac{1}{2}$ miles—range from 28 shillings per ton (equal to \$6.80) for heavy goods to between 33 and 49 shillings (\$7.02 and \$11.92) for light goods. These charges include collection and delivery, and a special rate for car loads between station and station is fixed at 14s. 10d. (\$3.60), together with a further special rate of 13s. 4d. (\$3.24) for the conveyance of timber in not less than 4-ton lots. The distance from Cardiff to Bristol is no more than 40 miles, and an enormous proportion of the produce imported into the ancient city of Bristol is distributed over South Wales. The rates to Cardiff are but very little below those to almost any point in the district, and vary from \$2.12 to \$4.05, car-load freightage being \$1.05. These figures are favorable compared to those charged on similar goods from Liverpool, whence a good deal comes under charges ranging from \$5.49 to \$11.50, with a special rate of \$4.78, the distance to Liverpool being 155 miles, which is practically the same as to London. Strange to relate, while the passenger fares to Manchester are a little lower than to Liverpool the goods rates are of an average of \$2 per ton higher than to the latter place, and doubtless that difference will be maintained as long as the railway companies can do so, in order to foster the Liverpool import trade as opposed to that of the Manchester ship canal.

Speed of trains.—The speed attained is not usually high, for the simple reason that the depots are very close together, the average distance between them being no more than 3 or 4 miles. In many instances the distance is so short that, prior to the introduction of the continuous brake, the speed must necessarily have been slow in such places; and even now that this is fitted to every passenger train, according to the regulations laid down by the board of trade, the average time made on local railways is scarcely 25 miles per hour, although the engines used are capable of traveling at a high speed. On most of the leading lines, the Westinghouse brake is used, and in the case of through trains, which do not stop at the smaller stations, the distance covered averages about 35 miles an hour.

Character of service.—I find that the service is for the most part excellent, as passenger trains run to the various local points every hour or two, and to the most important parts of the Kingdom several times during the day. On Sundays the trains are fewer, as are also the through connections, the London and Northwestern line being almost alone in its refusal to run trains on the first day of the week. The Taff Vale Railway track is quadrupled for the most part, and as a large volume of coal is daily brought to Cardiff, the line is esteemed the busiest in the Kingdom, and is, moreover, the oldest in the principality. Its farthest point is 24 miles from Cardiff, at a place named Merthyr Tydvil, where, in February, 1804, Trevethick's first locomotive ran on rails and won a heavy wager, in spite of the bricked chimney being knocked down by the first bridge reached. The Taff Vale Railway was not fully opened until 1841, although the act of Parliament was obtained in 1836 upon a report drawn up by Brunel, the great engineer. This railway, in common with the Rhymney Railway, the Brecon and Merthyr, and the Rhondda and Swansea Bay lines, all serve as auxiliaries to the Great Western Railway, the London and Northwestern Railway, and the Midland system of inland traffic.

Grades and bridges.—As a consequence of the hilly nature of the district, steep gradients are frequently met with, one on the London and Northwestern Railway being 1 in 36; and up this line a considerable mineral as well as passenger traffic is conveyed. At the tops of the valleys, at, say, 20 miles from Cardiff, an altitude of nearly 2,000 feet above the sea level is reached, an average grade of 75 feet to the mile for a distance of over 20 miles being common.

Of bridges, the Crumlin iron girder bridge, near Newport, is the finest structure of its kind in the United Kingdom. It has ten spans of 150 feet each, making a total length of 1,500 feet, and its height is 204 feet, the cost amounting to £200,000 (\$973,200). The Maesycwmmmer viaduct has sixteen stone arches, is 876 feet long, and 169 feet in height; and the Cefu-Coedycwmmmer viaduct has fifteen arches of 40 feet span, and a total length of 725 feet, its altitude being 115 feet, and the cost of erection £125,000 (\$628,650).

Tunnels.—A considerable number of railway tunnels have been necessitated by the hilly character of the country, but these are completely overshadowed in importance by the Severn tunnel, constructed for the purpose of shortening the Great Western Railway route from South Wales to Bristol and London. For nearly 4 miles it passes underneath the Severn River, and so great were the obstacles arising from the frequent flooding of the workings that more than thirteen years were occupied, and an expense involved of nearly £2,000,000 (\$9,732,000). The tunnel is $4\frac{1}{2}$ miles in length, 25 feet wide, and 20 feet high. It has a double track of bridge rails laid on longitudinal sleepers. In lining the tunnel no less than 75,000,000 vitrified bricks were used. It is pierced from 50 to 100 feet below the bed of the river, and beneath it runs a 9-foot driftway, and below that again is a 5-foot circular drain.

During the construction the workings were flooded four times, twice by land springs which poured in at the rate of 27,000 gallons per minute.

Corporate management.—All the railways are in the hands of private corporations subject to the limited liability act, and therefore termed limited liability companies; and most of them are good paying concerns, notably the Barry Dock and Railway, promoted by freighters who were dissatisfied with the facilities provided by the docks owned in Cardiff by the Marquis of Bute. In the days of its monopoly the Taff Vale system paid dividends to its ordinary share holders of as much as 18 per cent, but the Barry Company now lead with a 10 per cent dividend.

NAVIGABLE RIVERS AND CANAL LINES.

There are no navigable rivers in this district save the Severn, which opens out into the Bristol Channel near Newport, and a great deal of money has been expended, to some purpose, within recent years, in deepening the river, the Cardiff City corporation and the Bute Docks (Cardiff) Company, in conjunction with Worcester City and other towns, having subscribed to the cost of improvement with a view to developing the import trade with the Midlands. Hitherto the traffic has not been considerable, but the gain which Cardiff expects to derive will accrue for the most part from its character as an entrepôt or a place of exchange of commodities from small to large bottoms and vice versa. Already, vessels of a fairly good tonnage can steam or be towed to within 30 miles of Birmingham, the metropolis of the Midlands. It is intended to make a Birmingham ship canal, which involves the task of making a practicable waterway between that city and Worcester in connection with the Gloucester and Berkeley Canal to the Bristol Channel by way of the Severn. The plans are based upon a 200-ton coasting steamer or a 250-ton lighter, and as the upper portion, which is 30 miles long, rises by a series of locks to 425 feet above the river level, a hydraulic incline is proposed so that the boat will pass into a carriage caisson or trough filled with water and closed at both ends by gates or lifting sluices. The caisson is carried on a large truck, the framework of which is deeper behind than in front so as to carry the caisson in a horizontal position, and the truck rests on several wheels running along a railroad, the motive power to be hydraulic. What will become of this scheme is problematical, but anyway, it tends to show how desirous freighters are for developing the import trade.

There are several canals in South Wales, but the only one worthy of mention is the Glamorgan Canal, which runs alongside of the Taff Vale line from Cardiff to Merthyr. The bill for the construction of the canal was promoted in Parliament in 1784, the opening taking place ten years later. The canal, as well as the docks at Cardiff, is owned by the Marquis of Bute.

HIGHWAYS.

A balloon view of this district would show a complete network of railway lines and highways intersecting one another. Since the county councils act came into force a few years ago, the highways, outside of

the urban districts, are all controlled by those bodies, and scarcely five years have elapsed since the South Wales turnpike tolls were abolished by act of Parliament. The "Rebecca riots," in 1841, in certain parts of South Wales were caused by the extraordinary number of turnpike gates which had been fixed there; and although a great reduction was effected as the result of so practical an outburst of indignation half a century ago, tolls were exacted in South Wales for a long period after their abolition in other parts of the Kingdom, each township having at either end a tollgate similar to what prevailed in the time of Dick Turpin.

Railways have stolen the through traffic of the highways, and, since the stage coach has gone the way of all things, the only through traveler on the roads is the cyclist or the tramp. Nevertheless, the highways are more extensively used than ever in the populated districts as a result of the more frequent communication between adjacent townships and the rural districts caused by a spirited competition in both the solicitation and delivery of orders of a domestic nature by retail tradespeople. Between the various places, there are generally to be found several roads, but one of these is usually termed the highway, and invariably it is maintained in better order than the others. One is forcibly reminded of the old saying that "All roads lead to Rome," for here the highways lead to or from London, and milestones are fixed telling the number of miles, and occasionally quarter-milestones. In numerous instances, the distance to London may be read, as was the case in the days of Dick Whittington of old.

Some of the old Roman roads still remain practically as they were made by the ancient invaders, and at Caerleon, near Newport, abundant evidence is afforded of Roman occupation by the exposed ruins of an old town. These roads, like the parish roads generally, are narrow, compared with the recognized highways, which are about 20 feet in width, and are invariably macadamized, some of the principal roads having been made under the supervision of Macadam himself.

In conclusion, I may state that the roads are, for the most part, similar to the highways, with the exception that steam-roller crushing engines are utilized for making the roads smooth in the cities, and, although that desideratum is brought about, there is every reason for loud complaint against the dust given off by the limestone used in their composition if the water cart be not utilized regularly during dry weather. The principal thoroughfares have horse-car lines laid on granite blocks, and in other instances asphalt or wood is used. It is interesting to note that the city corporation of Cardiff intend introducing a special wood paving into the town made of a species of eucalyptus, to be imported from Australia at a cost of about 50 per cent dearer than ordinary timbers.

ANTHONY HOWELLS,

Consul.

CARDIFF, *June 28, 1894.*

SCOTLAND.

OCEAN LINES.

There are three ocean lines running from Glasgow to the United States, the Allan, Anchor, and Donaldson lines.

The first two carry passengers as well as freight. The latter does not make the carriage of passengers a specialty, and takes but few, and these not first class.

The Allan and Anchor lines average at least one ship per week each to New York, and sometimes two, if business requires it, and these return from New York to Glasgow, one of each line leaving New York each week.

ALLAN LINE.

Ports and vessels.	Tonnage.		Horse-power.
	Gross.	Net.	
To New York:			
Grecian	3,612	2,374	2,600
Norwegian	3,523	2,303	1,950
Peruvian	3,262	2,031	2,200
State of Nebraska	3,955	2,577	3,250
State of California	4,243	2,670	4,600
To Boston:			
Hibernian	2,997	1,873	1,900
Nestorian	2,725	1,679	1,400
Pomeranian	4,257	3,789	2,750
Prussian	3,029	1,940	2,000
Sarmatian	3,920	2,485	2,400
Scandinavian	3,067	1,967	2,000
To Philadelphia:			
Assyrian	3,970	2,608	2,500
Corean	3,487	2,258	2,000
Carthaginian	4,214	2,755	2,600
Siberian	3,903	2,558	2,600

Of these ships, running to Philadelphia, the *Assyrian* went by the way of Liverpool, St. John, and Halifax, and the *Corean* via St. John and Halifax.

All of the Allan Line steamships from Boston and Philadelphia, and the *Grecian*, *Norwegian*, and *Peruvian*, from New York, brought more or less of live cattle from the United States to Glasgow in 1893, and are well fitted for that business, and well managed, as shown by a loss of less than one-half of 1 per cent in the carrying of 1893.

The Allan Line sent a steamship to New York from Glasgow every week in 1893, except the first week in October and last week in November.

ANCHOR LINE.

Ports and vessels.	Tonnage.		Horse-power.
	Gross.	Net.	
To New York:			
Australia	3,593	2,321	1,330
Anchoria	4,167	3,713	2,854
Bolivia	4,157	3,561	2,914
Circassia	4,272	2,769	2,717
City of Rome	3,144	3,452	11,153
Devonia	4,270	2,771	1,408
Ethiopia	4,004	2,604	2,848
Furnessia	5,495	3,598	3,856
Scotia	2,762	1,788	1,100

The Anchor Line sent ships from Glasgow to no other port in the United States in 1893.

The Anchor Line missed the last two weeks in October and the third in November. Had it not been for the depression in trade between the United States and Glasgow in the latter part of the year there would have been no omission in weekly sailings of these two great lines.

The *City of Rome* made only four trips for want of business.

These steamships all made return trips from New York to Glasgow, so that there was every week a vessel of each of these lines leaving New York and Glasgow, except as above stated.

The *State of Nebraska* and *State of California*, of the Allan Line, and the *City of Rome*, *Anchoria*, *Ethiopia*, *Circassia*, and *Furnessia*, of the Anchor Line, are first-class passenger boats.

DONALDSON LINE.

Ports and vessels.	Tonnage.		Horse-power.
	Gross.	Net.	
To New York:			
<i>Indrani</i>	3,584	2,337	1,800
To Philadelphia:			
<i>Nerito</i>	2,919	1,872	(a)
<i>Nerano</i>	2,885	1,864	(a)
<i>Prodano</i>	2,475	1,624	(a)
<i>Tritonia</i>	4,272	2,719	2,200
To Portland, Me.:			
<i>Warwick</i>	2,526	1,648	1,500
<i>Alcides</i>	3,844	2,193	2,100
<i>Amarynthia</i>	3,982	2,595	2,100

a Not obtainable.

Of these, the *Nerito*, *Nerano*, *Prodano*, *Alcides*, and *Amarynthia*, were also engaged in the live cattle trade from the United States while carrying other freight.

The *Indrani* made but one trip from Glasgow to New York, November 9.

Passenger rates.—The distance to New York from Glasgow is 3,011 miles, and the passenger rates, first class, from New York to Glasgow range from \$40 to \$60, according to style of berth or cabin, except in June or July, when the rates are \$5 higher; second cabin, \$25 to \$35; steerage, \$20 to \$23.

All the vessels so far mentioned are built of iron or steel, are propelled by steam, and are safe and reliable boats.

The passenger ships are from nine to eleven days making a trip across the ocean, except the *City of Rome*, which usually makes the passage in seven days.

Tramp steamers.—Besides the vessels above mentioned, there were what are called "tramps" sailing from Glasgow to the United States in 1893, mostly in ballast, and returning with cargoes. From June 1 to December 31, 1893, three went to New York; three to Portland, Me.; three to Savannah, Ga.; three to Newport News, Va.; two to Balti-

more; and one each to Brunswick, Ga., Beaufort, S. C., Hampton Roads, Va., Delaware Breakwater, Philadelphia, Mobile, New Orleans, Apalachicola, Fla., and Sapello, Ga.

Ownership of lines.—The Anchor Line is controlled and owned by Henderson Bros., of Glasgow; the Allan Line by the firm of James & Alexander Allan; and the Donaldson Line by Donaldson Bros., of Glasgow.

Eastern connections of Anchor Line.—The Anchor Line has extensive communications of its own with Mediterranean ports and with India. Its ships brought freight in 1893 from the United States to Glasgow destined for Edinburgh, Leith, Perth, Aberdeen, and other points in Scotland; and to Belfast, Limerick, Cork, Dublin, and Londonderry, in Ireland; and Newcastle, England. These are the prominent points in the United Kingdom. Most of the freight brought by this company, and also by the Allan Line, going to smaller places in Scotland, is distributed by the wholesale merchants of Glasgow. The Anchor Line also brings goods to Glasgow destined for Bombay, Calcutta, Rangoon, Singapore, China and Japan.

This line has steamships running from Liverpool to Bombay and return, one boat leaving every two weeks and regularly from the same place to Calcutta. First-class cabin passage to Bombay or Calcutta, £45 (\$218.99). These vessels in the India service come to Glasgow and take more or less freight from here. There are sixteen steamships of this line running to India. The ships for Bombay call at Port Said, Ismailia, and Suez, and those bound for Calcutta stop at the same places, and, if necessary, touch at Gibraltar.

Distance from Glasgow, via Liverpool, to Gibraltar, 1,490 miles; to Port Said, 3,389; to Suez, 3,479; to Bombay, 6,490, and to Calcutta, 8,110.

New York and Mediterranean service.—There are also eleven steamships of the Anchor Line running from Mediterranean ports to New York, one leaving every fortnight. Some of these vessels also leave Glasgow for the Mediterranean every fortnight. Rates of passage, cabin fare: From Glasgow to Gibraltar, £7 (\$34.06); Genoa, £11 (\$53.53); Leghorn, £12 (\$58.39); Naples, £13 (\$63.26); Trieste, Messina, Catania or Palermo (via Italy), £15 (\$72.99).

The steamers of the Anchor Line in the Glasgow, Mediterranean and New York service are as follows:

Name.	Gross tonnage.	Effective horse-power.	Name.	Gross tonnage.	Effective horse-power.
Alexandria.....	2,017	807	Elysia.....	2,713	1,403
Alsatia.....	2,810	1,938	Victoria.....	3,358	1,924
Caledonia.....	2,151	1,159	India.....	2,476	911
California.....	3,410	1,653	Italia.....	2,248	962
Columbia.....	2,029	948	Olympia.....	2,051	964

All these steamships carry passengers as well as freight.

Return tickets are granted at reduced rates.

Steamers of the Anchor Line leave Marseilles for Liverpool and Glasgow regularly. Cabin fare to Liverpool or Glasgow by direct steamer, £11 (\$53.53).

The Anchor steamships from the Mediterranean to New York sail every fortnight, and call at the following places en route: Genoa, Leghorn, Naples, Messina, Palermo, Trieste, and Gibraltar. To or from New York or Boston the cabin fare is: To Gibraltar, £16 (\$77.86); Genoa, Leghorn, and Naples, £18 (\$87.59); Trieste, Messina, and Palermo, £21 (\$102.19).

Character of service.—The condition of the Anchor Line is good. I have had personal observation and experience of the line in direct communication from Glasgow to the United States, and have found everything satisfactory as to safe and sanitary condition of the ships, the courtesy and care of its agents and officers as to passengers and freights, and its promptness and trustworthiness in the dispatch of business. I can say the same for the Allan Line.

History of the Allan Line.—The Allan Line was founded by Capt. Alexander Allan, who was the pioneer in the commerce of the Clyde with America, and began running a line of ships from the Clyde to Canada in 1815, a connection mainly kept unbroken to this day. Until 1837, the ships traded between Greenock and Montreal, but in that year, owing to the deepening of the Clyde to a draft of 15 feet, the Allan vessels began to come to Glasgow, and have continued to do so ever since. The ships of this line running from Glasgow to Philadelphia and Boston do not take passengers from these ports to Glasgow. All the New York vessels carry passengers both ways, and the Boston boats from Glasgow to Boston.

The Allan Line has thirty-one steamships in all, constructed of iron or steel, and in good condition. Besides the service from Glasgow to New York, Philadelphia, and Boston, their ships run from Liverpool and London to the United States and return, carrying freight. These steamers run to New York and from London to Portland, Me., and from Liverpool to Philadelphia and Portland, Me.

From about the middle of April to the end of October, this line maintains a weekly service from Glasgow to Quebec and Montreal and from Liverpool to the same places. The service from London is every ten days instead of weekly to same places. About fourteen steamers are engaged in the Quebec and Montreal service. A monthly service is maintained also from Glasgow and Liverpool to Montevideo and Buenos Ayres.

Vessels of the Donaldson Line.—The boats of the Donaldson Line are the *Indrani*, *Tritonia*, *Warwick*, *Alcides*, and *Amarynthia*. The others were chartered for the voyages made in 1893. A few carry passengers, but none of them to exceed twelve at one time. The line runs no boats

from Glasgow to other points than the United States in connection with the United States traffic. In 1893, they ran the following steamships from Glasgow to Montreal and Quebec:

Name.	Gross tonnage.	Net tonnage.	Effective horse-power.
Hestia.....	3,790	2,434	1,880
Concordia.....	2,544	1,617	1,506

This comprises the extent of their line. The freight charges on this line for 1893 varied according to the business of that year. Flour was carried, as reported by them, at 5s. (\$1.21), 2s. 6d. (\$1.82), 12s. 6d. (\$3.04), and 14s. (\$3.40) per ton; grain free to 3s. (83 cents) per quarter; provisions, 12s. 6d. (\$3.04) to 20s. (\$4.86) per ton; woodenware, 15s. (\$3.65) to 22s. 6d. (\$5.46) per ton.

Average freight charges.—The Anchor and Allan lines also varied in their freight charges, but the average from New York for 1893 was as follows:

Wheat.....per bushel..	\$0.07	Hops.....per pound..	\$0.04@ 0.04
Oats.....32 pounds..	.07	Tobacco....per hogshead..	4.20
Barley.....per bushel..	.07	Rosin.....per ton..	4.20
Corn.....do....	.07	Lard in small packages, per	
Rye.....do....	.07	2,240 pounds.....	6.00
Flour.....per barrel..	\$0.36@ 0.48	Tobacco in cases, per 40 cu-	
Flour in sacks, per 2,240		bio feet.....	4.80
pounds.....	2.40	Apples.....per barrel..	0.60@ 0.72
Clover seed.....do....	4.20	Hams...per 2,240 pounds..	4.80
Bacon.....do....	4.20@ 4.80	Butter.....do....	6.00@ 7.20
Lard.....do....	4.20@ 4.80	Cattle.....per head..	9.60@10.80
Cheese.....do....	6.00@ 7.20	Hay pressed in bales, per	
Tallow.....do....	4.20	2,240 pounds.....	7.20
Beef.....per barrel..	.72	Measurement, per ton of 40	
Beef.....per tierce..	.96	cubic feet.....	3.60@ 4.80
Beef, fresh, per 40 cubic feet	3.60	Lumber, hard.....per ton..	4.20
Pork.....per barrel..	.72	Lumber, soft.....do....	5.40
Oil cake per 2,240 pounds..	2.40	Horses.....per head..	20.00@25.00

COAST STEAMSHIP LINES.

G. & J. Burns & Co. own a line of thirteen iron and steel screw and paddle steamers carrying freight and passengers from Glasgow to Manchester (260 miles), twice a week; to Liverpool (226 miles), three times per week; to Londonderry (135 miles), twice a week; also to Belfast from Ardrossan in connection with passenger trains, some touching at Isle of Man.

The Carron Company Line consists of seven iron and steel screw steamers running from Grangemouth to London, and carrying passengers and freight from the west coast of Scotland. Freight is taken from Glasgow either by rail or by the Forth and Clyde Canal to Grangemouth, and passengers on through tickets from Glasgow to pier at Grangemouth.

The Clyde Shipping Company own twenty iron and steel screw steamers running from Glasgow to London, via Belfast (795 miles), every two weeks; to London direct (758 miles), weekly, touching at Plymouth and Southampton on return voyage; Glasgow to Cork direct (352 miles), weekly; Glasgow to Limerick direct (428 miles), weekly.

The J. & P. Hutchison Company's ships are of iron and steel, with tonnage from 500 to 1,000, and sail from Glasgow to Rouen weekly; Nantes every ten days; Bordeaux weekly; Oporto fortnightly; Cadiz every three weeks; Malaga, and Stettin and Dantzic monthly, in season, and to Galway fortnightly.

The David MacBrayne Line is known as the Highland route. It consists of eighteen steamers, screw and paddle, connecting Glasgow with all ports to the north and among the Highlands. They carry passengers, freight, and mails.

RIVERS AND CANALS.

The only navigable river within this consular district is the Clyde. It is navigable only from Glasgow to its junction with the Firth of Clyde (at Greenock), which is an extension of the river, or an arm of the sea meeting the river. There are no ports upon the Firth of Clyde at which the large ocean steamers touch, but there is quite a coast-line business done, of which I have made mention.

It is 21 miles from Glasgow to Greenock by the river, and the stream has been made navigable for this distance after many years of hard labor and at great expense. The river is lined for a good share of its navigable distance by shipbuilding industries, and is constantly filled with shipping at anchor and under way.

Running out from the Firth of Clyde are many lochs or arms, places of interest, reached by coasting vessels and pleasure steamers, which run daily in the summer time.

There are two canals in this consular district, the Forth and Clyde and the Caledonian.

The Caledonian Canal is owned and controlled by the Government, and the dues are quite heavy and burdensome. The canal connects the navigable waters of the west coast in the north of Scotland with those of the east coast, commencing at the upper end of Loch Eil, near Fort William, and ending at Inverness, on Moray Firth, and passes through Lochs Ness, Oich, and Lochy. It is used for the transportation of passengers and freights by coasting vessels. The canal proper is only 22 miles in length, to which may be added 4 miles of dredging to deepen Loch Ness. It cost £1,350,000 (\$6,569,100), and has not been profitable. Vessels from 500 to 600 tons can pass through it.

The Forth and Clyde Canal is owned and controlled by the Caledonian Railway Company. It commences at Bowling, on the Clyde, and runs to Grangemouth, on the Forth, with a branch to Glasgow. Its length is about 40 miles. The maximum draft of vessels entering

the canal is 8 feet 9 inches, and the ships are taken through with standing masts. Lighters owned by canal traders take the cargo of vessels drawing more than 8 feet 9 inches. The Caledonian Railway Company do not operate the canal; they are simply toll-takers. The rate of tonnage varies with the nature of the cargo. This canal affords a short route by water across Scotland from the Firth of Clyde to the Firth of Forth, and it is considered an easy and desirable passage.

Coast steamers in the district of Troon.—The following is a report of the consular agent at Troon, Andrew McMurray, esq., on the coast steamers in his district:

Ports and vessels.	Dimensions.			Nature of cargo.	Registered tonnage.	Owners.
	Length.	Beam.	Draft.			
	Ft. in.	Ft. in.	Ft. in.			
Ardrossan to Belfast: <i>a</i> Grampus <i>b</i> (daily) ..	211 2	28 8	14 6	Mails, goods, and passen- gers.	288	G. & J. Burns.
Seal <i>b</i> (daily)	210 7	28 4	14 4	.....do.....	281	Do.
Hound <i>c</i> (daily)	250 3	32 1	15 5	.....do.....	332	Do.
Adder <i>c</i> (daily dur- ing summer months.)	280 3	13 8		.....do.....	146	Do.
Ardrossan to Newry and Dundalk: Newry <i>b</i>	176 6	24 0	13 0	.....do.....	185	The Dundalk and New- ry Steam Packet Co., Limited.
Troon to Belfast: Kathlene <i>b</i>	155 7	23 1	11 8	Regular freight carriers, coal principally.	128	John Milligan, Belfast.
Eveleen <i>c</i>	171 0	26 1	12 6	.....do.....	160	Do.
Balnfal <i>b</i>	174 0	26 1	12 6	.....do.....	217	Do.
Susannah Kelly <i>c</i> ..	140 7	21 6	11 2	.....do.....	91	Do.
Troon to Dublin: St. Margaret <i>c</i>	175 0	26 6	10 5	.....do.....	185	Robt. Harper, Glasgow.
Marlay <i>c</i>	200 2	21 2	14 0	.....do.....	349	R. Telford & Co., Dublin.
Ayr to Belfast: <i>a</i> Carrick <i>c</i>	186 0	28 0	14 2	Goods and pas- sengers.	231	The Ayr Steam Ship- ping Co.
Ayr to Larne: Monab	160 0	24 2	14 0	.....do.....	230	Do.
Stranraer to Larne: Princess Mary and other steamers. <i>c</i>	280 5	35 6	13 4	Daily mail and passengers.	368	John Thompson, Car- lisle, managing owner.
Ardrossan to Isle of Man: <i>d</i> Peverill <i>b</i> (during summer months.)	207 6	26 0	13 0	Goods and pas- sengers.	244	The Isle of Man Steam Packet Co., Limited.

a Fares, cabin, single, 9 shillings; return, 14 shillings. *b* Iron. *c* Steel. *d* Round trip, £2 11s. 6d.

Distances.

	Miles.		Miles.
Ardrossan to Belfast	72	Troon to Dublin	145
Ardrossan to Newry	120	Ayr to Belfast	65
Ardrossan to Isle of Man	114	Ayr to Larne	60
Troon to Belfast	69	Stranraer to Larne	39

RAILWAYS.

There are four lines of railways: Caledonian, North British, Glasgow and Southwestern, and the Western Highland.

The Caledonian Railroad.—The Caledonian Railroad is owned and controlled by a private corporation chartered by act of Parliament.

The total length of its lines is 876½ miles, of which 144½ miles are leased. The main line, running from Glasgow and Edinburgh to Carlisle, England, connects with the London and Northwestern Railway at the latter place; and, in connection with it and the Great Western Railroad, runs express through trains to Bristol, Bath, Exeter, Torquay, Plymouth, and Penzance. There are also, in connection with the London and Northwestern Railroad, through trains to London, Manchester, and Liverpool.

The following are the distances in miles from Glasgow: To Carlisle 102, to Bristol 384, to Manchester 225, to Liverpool 223, and to London 405. Besides the main line to Carlisle there are branches as follows: From Glasgow west to and running through Greenock, where it branches to Wemyss Bay; from Gourock steamers run to Port Rush, Ireland; from Wemyss Bay steamers run to the Isle of Arran, and Rothesay, in the Isle of Bute (it is 24 miles to Gourock and 31 to Wemyss Bay); from Glasgow southwest to Ardrossan, 29 miles, where steamers run in connection with trains to Brodick and Lamlash, in the Isle of Arran, and also to Belfast, Ireland; from Lugton, on this line, there is a branch to Kilmarnock, and a branch from Kilwinning to Irvine. From Glasgow eastward to Edinburgh, 45 miles; from Edinburgh the line runs northwest to Larbert, and from there to Stirling, Perth, Dundee, Forfar, and Aberdeen; and from Dunblane, between Stirling and Perth, a branch runs to Oban, in the western Highlands. From Glasgow a branch runs to Larbert. From Oban steamers run to Western Isles of Scotland and to various points on the western coast of the Highlands. From Ayr to Edinburgh, 77 miles. From Lockerbie, on the main line, via Dumfries, a branch runs to Stranraer and Port Patrick. From Stranraer connections are made with steamers for Belfast. It is two hours' sail from Stranraer to Belfast.

There are numerous other small branches of this road running to various points of interest to tourists. In the Highlands connections are made with coaches and omnibuses, and almost any place desired can be reached without unnecessary delay. Local trains are run from Glasgow to suburban points for the accommodation of people doing business in Glasgow.

The condition of the Caledonian line is first class. The tracks are well laid and ballasted. There are no grade crossings in cities or rural districts. The track crosses all highways by bridges over or culverts under. At the stations the platforms are above the tracks and on a level with the floor of the compartments of the cars, which are entered by side doors. People going one way are landed upon one side of the tracks, and those going the other way, upon the other side. No crossing of the tracks at the stations is allowed. Danger to life and limb at these stations and at all crossings is well provided against, both by construction and by guards to warn passengers and loiterers.

The tracks are laid double on all principal lines, and upon through trains are run corridor cars with dining saloon and sleeping cars.

Communication between the larger places, and on main line, is very frequent, and abundant accommodation is furnished. To the smaller places the trains run as often as the business requires.

The manner of handling baggage in Scotland, while careful upon this as well as other railroads, is unsatisfactory, in that the baggage is all deposited together and must be claimed and identified at point of stopping. The check system is unknown, and baggage ought to be well marked, with name and address of owner.

There are two classes of passenger coaches and fares for the same—first and third. Third class, for short distances, is just as good as first, and much cheaper. The only difference is in the furnishing of the compartments. The maximum first-class rates are 3 cents and third class 2 cents per mile. Great reductions are made on round-trip tickets, and there are many cheap excursions, especially on Saturdays. There is probably no place in the world where the tourist can reach as many points of interest so cheaply as from Glasgow. Reductions are also made from Glasgow to various points in favor of annual, quarterly, and monthly tickets.

Freights are regulated by the board of trade and they vary with conditions of trade and route.

No great obstacles impede the roadbed except in the Highlands or mountainous districts where there are some heavy grades and numerous short tunnels.

Glasgow and Southwestern.—The Glasgow and Southwestern Railway is governed by a board of directors elected by the stockholders of the corporation. The corporation is chartered by act of Parliament. Points touched by this railway from Glasgow are, to the south and west, Greenock, Paisley, Johnstone, Irvine, Troon, Ardrossan, Largo, Kilwinning, Ayr, and Stranraer.

There is also a direct line to Carlisle, England, via Kilmarnock and Dumfries.

Distances in miles from Glasgow: To Greenock $25\frac{1}{2}$, to Paisley $7\frac{1}{2}$, to Johnstone $10\frac{3}{4}$, to Kilwinning 26, to Ardrossan 32, to Largo 36, to Irvine 30, to Troon 35, to Ayr $41\frac{1}{2}$, Kilmarnock 24, to Dumfries 82, and to Carlisle 115.

At Kilwinning, the line divides and runs through Irvine, Troon, and Ayr to Stranraer. A branch runs from Ayr to Dalmellington. From Dalrymple, 4 miles from Ayr, a branch runs down the coast of the Firth of Clyde to Stranraer, about 44 miles. Stranraer is reached by this line from Glasgow, via Ayr, in a run of $99\frac{3}{4}$ miles. From Dumfries, a branch runs to Stranraer; distance, 75 miles. At Carlisle, the trains make connection to all parts of England, and through trains are run to London, Liverpool, Manchester, and other large cities in connection with the Midland Railway. At Greenock, Ardrossan, Largo, and Stranraer, connections are made with steamers running to all ports of the west coast of Scotland and east coast of Ireland. The total length of the road is $485\frac{3}{4}$ miles, of which $129\frac{3}{4}$ miles are leased.

The passenger mileage per day was 10,210 $\frac{1}{2}$ miles in 1893. For the last half of 1893 the passenger mileage was 1,592,891 miles, and goods and mineral trains had mileage for same period of 1,368,805 miles.

The inspecting engineer reported at the end of the year that the line was in good working condition. The roads are well laid with rock ballast and pass under or over all streets and highways by culverts or bridges.

All the railway stations are in good condition and are supplied with bridges by which passengers cross over the tracks in passing from one side of the road to the other. Double tracks exist in all cases, and at the stations passengers alight upon a raised platform on the left side of the train. From Glasgow to Paisley four tracks are laid.

The mechanical construction of switches is of the best, and the block signal is in use throughout Scotland.

Trains leave Glasgow for principal stations about every hour. The service can not be criticised so far as attention and courtesy of officials are concerned. Both through and local trains are in use.

Passenger fares and freight same as the Caledonian, varying, in both cases, with amount of competition and business. The maximum of passenger fares is fixed by Parliament—not above 3 cents per mile first class, and 2 cents third class. The maximum of freights is fixed by the board of trade.

This road also has numerous cuts and short tunnels through the hills.

North British Railway.—This railroad is owned and operated by a private corporation, chartered by act of Parliament. Its total length is 1,097 $\frac{1}{2}$ miles. It consists of 5 $\frac{1}{2}$ miles of four-track, 7 $\frac{3}{4}$ miles of three-track, 470 miles of double-track, and 614 $\frac{1}{2}$ miles of single-track road.

The main lines run from Glasgow and Edinburgh to Carlisle, England, where connections are made with other railways to all the principal places in England; from Glasgow and Edinburgh through Berwick to Newcastle, England, and from Edinburgh to Aberdeen, in the north of Scotland.

There are numerous branch lines.

There are two through routes to England, viz, the East Coast route, through Berwick, Newcastle, Leeds, and York to London, and the Waverley route, which passes through Melrose, Hawick, and Carlisle to London. Liverpool and Manchester may also be reached on this route. Through trains on both these routes are run from Aberdeen through Dundee to London. Through trains run also from Aberdeen and Dundee to Edinburgh and Glasgow, via Tay Bridge, Fifeshire, and Forth Bridge; from Alloa and Stirling to Edinburgh, via Forth Bridge; from Glasgow to Perth and the north, and Glasgow to Stirling and Grangemouth; and from Edinburgh to Glasgow, and thence to Balloch and Helensburg.

Nearly every point of interest in the Highlands can be reached by this railway and its connections, and also all places of resort both on the east and west coasts of Scotland.

Special attention is given to tourists, and cheap excursions and reductions in fares are of frequent occurrence in the summer months.

Passenger accommodation and fares and freight charges are the same as upon the other railways, and tracks and stations are constructed and guarded as heretofore stated. The condition of the line is good.

Through trains run on the principal lines from three to six times a day each way, and suburban trains at least every half hour from Glasgow.

The West Highland Railway.—This is a private corporation chartered by act of Parliament.

The road commences at Helensburg, on the Clyde, about 22 miles from Glasgow, and runs through the western Highlands of Scotland to Fort William, a distance of 98½ miles. It is single track, except at the stations, and its course is through a most delightful country of lochs and mountains.

The stations on the road are planned and located with special reference to the lochs and other points of interest to tourists and sportsmen. After leaving Helensburg, it skirts along the Gareloch, an arm of the sea, runs up to the head of Loch Long, another arm of the sea, and passes over to the side of Loch Lomond, a fresh water loch. It follows the west coast of this loch 8 or 10 miles, and goes through the moor of Raunoch, where it attains an altitude of 1,350 feet above the level of the sea; thence it goes down the east side of Loch Yreig, passing numerous other lochs before it reaches Fort William. From it, can be seen Ben Lomond, Ben More, and Ben Nevis, the highest mountain in Scotland. From Gareloch Head, the line gradually rises to an altitude of some 500 feet above the loch, along the side of which it runs with a heavy grade. This was a very difficult piece of engineering work, but it has been skillfully and successfully carried out.

This railway has been five years in construction and will be opened for travel in the month of July of this year. It will be the most picturesque railway route in Scotland.

HIGHWAYS.

There are no roads that have any distinction as highways of commerce. The chief transportation of freight is by rail and water, but all the principal roads of Scotland are macadamized and kept in the best condition. Tourists find excellent routes everywhere. The roads, on account of their uniform firmness and smoothness, are specially adapted for carriage and bicycle riding and for walking. They are inclosed everywhere, except in the Highlands, by walls or hedges, and frequent guide-posts notify the traveler of their route and the distance between intervening points of interest.

ALLEN B. MORSE,

Consul.

GLASGOW, *June 19, 1894.*

IRELAND.

RAILWAYS.

There are three important railways in the north of Ireland, viz, the Great Northern, the Belfast and Northern Counties, and the Belfast and County Down. Each one of these has several minor branches which facilitate communication with all towns of any importance. The condition and character of these railways in certain respects are outlined fully in the details which follow. Such conditions as smoothness of track, comfort, speed, and safety are measured largely by comparison; what might be fairly good in the estimation of one traveler might be considered poor indeed in the estimation of another. There is this to say, generally: To the American traveler, the compartment system, which prevails altogether, will not commend itself, as a rule, because the car is cramped, not as well lighted and ventilated or as well finished, nor has it the conveniences of a first-class carriage on the principal trunk lines in the United States. This applies to the first and second class coaches; third-class coaches are very inferior in these respects. It is noticeable that within the past two years marked improvements have taken place. Where new cars replace the old ones, of whatever class, there is an improvement in their fittings, such, for instance, as electric lighting and upholstering better adapted to comfort. The new third-class coaches are still considerably inferior to the American carriage, although far superior to the old ones in comfort and convenience. Passengers once inside the compartment must remain there until the train stops. For short distances, the traveler can put up with them.

The speed varies according to the train; the minimum is about 20 miles an hour; the maximum about 45 miles. All railways are operated on the block system; they are well provided with approved safety appliances; the lines of trackage are carefully inclosed and protected from straying stock, etc.; no one except employees is permitted to walk on, or alongside, or to cross the tracks. Stations are so arranged that the entrances and exits are either over or under the tracks, through covered ways, where it is necessary to cross from one platform to another. Surface crossings are rare, and accidents less frequent than in the United States. The officials and attendants are generally civil and accommodating. Baggage is handled by porters employed by the railway company free of charge from the moment it leaves the cab until stored away in the car, although many travelers "tip" them lightly for their service. American travelers should keep in mind that their luggage is never checked, and that they must invariably claim it the minute the destination is reached and it is ejected from the car. All the railways are owned by private corporations.

The Great Northern Railway.—This company has in operation 523 miles of railway lines (139 miles are double and 384 single track) and is the most important railway in the north of Ireland. Its termini are Dublin, Belfast, and Londonderry. Some of the principal towns which it touches are Lisburn, population, 14,000; Lurgan, 11,500; Portadown, 8,500; Armagh, 8,300; Monaghan, 3,000; Dungannon, 4,100, and Omagh, 4,300.

The ballast for the roadbed consists chiefly of gravel and sand; in some instances, in a soft or clayey soil, broken stone is used as a foundation for the ballast. The permanent way or main line is at present being fitted with bull-head steel rails, weighing 75 pounds per yard, and 26 feet in length; these are laid in cast-iron chairs, weighing 37 pounds. Recently the directors ordered rails weighing 85 pounds per yard, having concluded that the others were too light. The sleepers are of Baltic redwood, creosoted, and measure 10 inches in width by 5 in thickness. The gauge of the road is 5 feet 3 inches, which is the uniform gauge throughout Ireland. In regard to the rolling stock, the larger engines for passenger trains have cylinders 17 by 24 inches, are worked by four wheels, the two hind ones being coupled, and the engine carried on a bogie in front. The freight engines are worked by three wheels on each side, the two hind ones being connected. The average steam pressure is about 140 pounds to the square inch. The latest passenger carriages of the first and second class are about 45 feet in length, divided into four compartments and fitted with lavatories. The first-class carriages are upholstered in melton cloth, except the smoking carriages, which are done in leather; the second class are done in a figured rep cloth; the third class are not generally upholstered, though some of them on the through trains have ordinary cushioned seats. Nearly all third-class carriages are divided into five compartments, each of which is intended to accommodate ten passengers, five on a side; when filled, they are too close for even ordinary comfort. The ordinary open freight cars carrying coal, etc., carry 8 to 10 tons, though some are now being used, manufactured on the American principle, which will carry 30 to 35 tons. The box cars average about 8 tons.

The distance between Belfast and Dublin is $112\frac{1}{2}$ miles. There are six trains daily between the two cities; the fastest train makes the run in $2\frac{1}{2}$ hours. The distance from Belfast to Londonderry by this route is $100\frac{1}{2}$ miles. There are five daily trains each way; the quickest time is $3\frac{1}{4}$ hours.

The total capital of this company, including its branches, is £8,321,955 (\$40,494,633). The stock is held principally in Ireland. The average rate of dividends is $5\frac{1}{2}$ per cent. The rolling stock is made up by 137 engines, 313 passenger coaches, and 3,502 freight cars, or "goods wagons," as they are called here.

The steepest gradient on the main line of the Great Northern Railway is 1 in 100. On the branch lines the steepest gradient of any extent is 1 in 70, though in one or two instances, for distances of one-eighth to one-fourth of a mile, it is as high as 1 in 57 or 58. The sharpest curve on the main line is 1,650 feet radius, and on the branch lines 990 feet radius.

There are two tunnels on the line; one between Goraghwood and Lough Swilly, about 1 mile in length, and one near Dungannon about half a mile long. The boring of the tunnels is principally through clay and sand, with an occasional bed of rock.

The following from the general manager is in reply to my request for the information therein contained :

Statistics show that the number of passengers, exclusive of season ticket holders, and number of tons of freight conveyed over this line during the year 1893 were as follows: Passengers, 4,584,235; tons of freight, 898,933.

The passenger fare in Ireland is uniformly 4, 3, and 2 cents per mile for first, second, and third class, except in cases of excursions, when a considerable reduction may be made, sometimes amounting to more than one-half.

There seems to be no standard rate for carrying freight in this country. Each company is governed by the amount of competition with which it has to contend, either from opposition railways, ships, or canals. A distinction is in many cases made between the charge per mile in a long and short haul, but not a uniform one. A maximum rate per mile which may be charged is fixed by act of Parliament, but in very few cases does the actual charge reach the limit. The following rates on a number of articles, which include several classes of merchandise carried over the Great Northern Railway, between Belfast, Dublin, and Londonderry, may serve to give a general idea of the current charges:

Articles.	Belfast to Dublin.	Belfast to Londen- derry.	Dublin to Londen- derry.
Meats, tinned goods, and machinery in cases:			
Under 3 tons.....	\$5. 18	\$5. 50	\$7. 96
Over 3 tons.....	5. 06	.....	7. 84
Coal:			
Under 6 and not less than 4 tons.....	2. 10	1. 90	2. 57
Over 6 tons.....	2. 00	1. 82	2. 49
Machinery packed..... per ton..	6. 88	8. 02	11. 49
Furniture..... do.....	8. 10	9. 36	13. 08
Dry goods:			
Under 3 tons.....	5. 91	9. 11	9. 60
Over 3 tons.....	5. 79	.....	9. 48
Flour:			
Under 2 tons.....	3. 85	2. 83	6. 52
Over 2 and under 5 tons.....	3. 04	.....	4. 23
Over 5 tons.....	2. 67	.....	3. 89

6 Per single ton.

The following are exceptional rates at owner's risk. Owners to load and unload:

Articles.	Belfast to Dublin.	Belfast to London- derry.	Dublin to London- derry.
Flour:			
Under 5 tons.....per ton..	\$3. 34	α\$1. 46	\$4. 64
Over 5 tons.....do.....	2. 23		3. 04
Machinery.....do.....	3. 16		
Coarse meats.....do.....	3. 04		3. 65
Dry goods.....do.....		4. 86	
Preserves.....do.....		3. 28	
Furniture (rough).....do.....		7. 80	
Live stock:			
Per wagon.....	12. 16	11. 31	15. 83
Per half wagon.....	8. 26	6. 68	12. 34

α Per single ton.

Belfast and Northern Counties Railway.—This road has in operation 249 miles of railway, 33 of which are double track and 216 single. It is the second principal railway in the north of Ireland. Its principal termini are Belfast and Londonderry. Several of its branches extend to such important points as Larne, population, 5,378; Ballymena, 9,121; Port Rush, 4,000 in summer, 1,600 in winter; Cookstown, 4,831, and Coleraine, 6,708. The branch to Larne is a favorite route to points in Scotland and England. Larne has a good harbor and is but 39½ miles from Stranraer, Scotland. Swift steamers make the run across the North Channel in two and one-half hours, connecting with fast trains for Glasgow, Edinburgh, and London. Port Rush, 7 miles from the Giant's Causeway, is a favorite watering place. The "golf links" there are reputed to be among the best in the Kingdom and "golfers" from all sections are there in season enjoying the bracing atmosphere and their favorite pastime.

The rails used on this road weigh 83 pounds per yard, and the chairs 27 pounds each. The rolling stock of all descriptions is quite similar to that used on the Great Northern and other railways in this country, as the gauge is uniform and the general conditions of the roads much the same. The American style of freight cars has been tried on this line, but they do not seem to meet the demands of the shippers, as the shipments are small and distances short. There are in use on this line 65 engines, 280 passenger coaches, and 1,993 freight cars. The steepest gradient is 1 in 60, but this is only for a short distance, 1 in 80 being the heaviest for any considerable distance. The sharpest curve is 594 to 660 feet radius. There are two tunnels on the line, one 900 yards and the other 350 yards in length. The boring is entirely through rock. The capital of the company is £2,508,000 (\$12,203,928). The majority of the shares is held in Ireland, but a considerable portion is held in England. The dividends for the last five years have averaged 5½ per cent. The road is reported as working on a sound financial basis.

As no response has yet been received to my request for the amount of freight and passenger traffic on this line for the year 1893, I here-

with append the figures for 1892: Passengers, 2,520,317; tons of freight 625,486.

The Belfast and County Down Railway.—This road has in operation 76 miles of track—64 single and 12 double. Little or no “pitching” is used in the construction of the road, as it is principally over an undulating country, and the towns reached are mainly seaports and summer resorts. The rails used weigh 80 pounds per yard, and are set in 57-pound chairs. The rolling stock and general conditions are similar to those on the other lines. The total capital is £1,186,738 (\$5,774,667), the stock being held principally in Belfast. The dividends for the last five years have averaged 6½ per cent. There are in use 26 engines, 141 passenger coaches, and 515 freight cars. There is no heavy work on the line, such as cuts, bridges, or tunnels, worth mentioning. The steepest gradient is 1 in 70, and the sharpest curve is 660 feet radius. The number of passengers carried during the year 1893 was 2,045,112, and the number of tons of freight 205,133.

HIGHWAYS.

Many travelers from the United States are accustomed to include England and Scotland in their itineraries, omitting Ireland, either because it is out of their way or they are indifferent to its attractions. This is a mistake; for the summer tourist in hunt of a cool, invigorating climate, or the student enlarging his scope of knowledge, will find it both pleasant and profitable to include as much of Ireland as he can in his journey abroad. It is replete with historic interest. The sanguinary wars of the Celtic chiefs or kings and their tribes, not only against each other but against the frequent invader, did much to destroy all traces of ancient architecture and written records, but enough of both remains to repay the student and antiquary.

The scenery from the railway carriage, the lively jaunting car, or on foot, is varied and often charming. Much of the country is undulating, with an occasional good-sized hill or group of them. There are no forests, but there are many beautiful groves and avenues of fine forest trees planted years ago. A goodly portion of the land is arable; much of it is in pasture, and such pasture I never saw outside of Ireland.

The highways are of the best—all macadamized, well drained, solid as a rock, and many of them nearly as smooth as a floor. When a hole, rent, or depression shows itself caretakers are promptly on the spot to repair the defect. The roads are usually bordered by abundant and thrifty hedgerows of hawthorn, beech, and privet, the foliage producing a most pleasing effect.

The principal highways vary in width, ranging from 16 to 35 feet. Some of them have footpaths on either side, made of gravel or fine broken stone, from 4 to 5 feet wide and raised several inches above the road. Nearly all the roads are well adapted for bicycling and pedestrian parties, as, in addition to being smooth, the grades are

light, and each succeeding year these methods of "doing" Ireland are growing in popularity. Cycling parties, particularly, are becoming more frequent.

There are in the city of Belfast about 150 miles of streets, of which about 10 miles are paved with stone sets 4 inches square, 50 miles macadamized, and 90 miles paved with sea pebbles. There is no uniform width in the streets. A street may be much narrower at one point than at another, and may not retain the same name for the whole of its length.

One of the main highways in this district leads from Belfast, around the coast of Antrim, to Londonderry. The principal point of interest on this road is the town and castle of Carrickfergus. The castle was built in the thirteenth century. It is still in a good state of repair, and is used as a Government fortress. It was here that King William landed his forces in 1690, and the stone (an immense block of basalt) on which the king landed is built into the old pier head, and is known as "King William's stepping-stone." Farther along the road may be seen Glenarm Castle, which is built upon a high cliff, and is now the property of Lord Londonderry. After passing through many quaint villages and hamlets, the Giant's Causeway, one of the wonderful natural rock formations of the world, is reached. A little farther on are the ruins of Dunluce Castle, which occupies a prominent place in the history of feudal times.

The old walled city of Londonderry, which successfully resisted the siege of King James in 1689, is a place of great interest. The walls still stand and are kept in an excellent state of repair. Among the old cannon mounted on the walls a historic gun known as "Roaring Meg" still remains in the same spot where it did such execution in defense of the city. Another important highway is the road leading to Downpatrick. Here there is to be seen a very pretty cathedral, which claims the honor of being built upon the site of the last resting place of St. Patrick, St. Bridget, and St. Columb. On the old highway from Belfast to Dublin, there is scarcely a town that has not some historical association.

Some of these points of interest may be noted, as follows:

Armagh, one of the most ancient towns in Ireland and the seat of an episcopal see founded by St. Patrick.

Bangor, a very ancient seaport town, 10 miles from Belfast. It is recorded that the first house built of stone and lime in Ireland was erected there. It was the chief seat of sanctity and learning of the ancient Irish Church. The height of its fame was attained during the sixth and seventh centuries. Learned missionaries set out from there for different parts of Europe to teach the Scripture. St. Comgal was the first abbot of the monastery, which at one time had 3,000 monks within its environs. This abbey was destroyed by the Danes in 821. Some of the ruins are still visible.

Coagh is situated about 4 miles from Cookstown. A battle took place at the ford of the small river on which it is situated in the year 1641, when the chapel of Tamlaght was destroyed by the Parliamentarians. James II crossed the river at this place on his march to the siege of Derry.

Donegal is situated at the mouth of the River Eske. It has two splendid ruins, one a castle in a fair state of preservation; the other an ancient abbey, founded for the Franciscan friars in the year 1474. There is said to be a subterranean passage one-fourth of a mile long between the castle and the abbey.

Dungannon is beautifully situated on a hill. It was the seat of the chiefs of the O'Neills from its earliest days, and on the hill crowning the town formerly stood a castle erected by those powerful chiefs.

Donaghmore, 2 miles from Dungannon, has an interesting ecclesiastical history. St. Patrick built a church here, where an old grave is now to be seen, and close to which is a fine specimen of the old Irish cross.

Garvagh, the scene of a battle in the year 1641 between Colonel Canning and Sir Phelim Roe O'Neill. Colonel Canning's forces were defeated and himself killed. It is reputed to be one of the prettiest towns in Ireland.

Hillsboro is the seat of the Marquis of Downshire. Hillsboro Fort, often visited by tourists, was built in the reign of Charles I and is constituted a royal fort, of which the Marquis of Downshire is hereditary constable. King William stopped here when passing on to the Boyne, and it was here he signed the Regium Donum grant to Presbyterian ministers.

Holywood is about 4 miles from Belfast. The highroad passes over Bunkers Hill, from which the American "Bunker Hill" is named. King John halted here on his march from Carrickfergus to Downpatrick in the year 1210. About the year 1200 a monastery of the third order of Franciscans was established and tenanted by 400 monks.

Larne.—Near the harbor may be seen the ruins of Olderfleet Castle, which was once an important defensive fortress. It was there that Edward Bruce landed with his band of Scots when he undertook to free Ireland from English rule in the year 1315.

Limavady is a town of great antiquity. It was the seat of the celebrated O'Cahan, who was chief of one of those powerful "septs" of Ulster that were so constant and determined in their opposition to the English from the year in which Sir John De Courcy received the province from the Plantagenets till the day they were finally subdued under the first of the Stuarts. There are numerous places of interest, including the remains of an ancient castle.

Newry is a very ancient town. In the year 1175 Maurice McLaughlin, King of Ireland, founded an abbey here, to which great immunities and endowments were granted and afterwards confirmed by Hugh De Lacy, Earl of Ulster, in 1237. In 1689 the Duke of Berwick set fire to the place and left it in a ruined condition.

Newtownards.—A most interesting ecclesiastical ruin may be seen near the town, where, in the old cemetery of Magh Bile, stand the remains of an abbey said to have been founded by St. Finian in the year 550. Several monumental tablets, one of the oldest bearing an Irish inscription, may be seen built against the north wall.

Raphoe is a small town 12 miles from Londonderry. The Cathedral of St. Eunan, which is now the parish church, was founded in the year 565, is one of the oldest in Ireland, and contains many interesting specimens of ancient architecture.

OCEAN LINES.

The following are the principal lines of steamships sailing from this port:

The Lord Line.—This line is owned and controlled by the Irish Ship-owners Company. There are six boats on the line which carry bread-stuffs and miscellaneous cargoes between this port and Baltimore. They carry no passengers. Four of the steamers are of steel and two of iron. There are periodical sailings at intervals of about two weeks. There is no fixed schedule of freight rates. They vary according to the nature of the goods and the condition of trade.

The Head Line.—This line is managed by G. Heyn & Sons, of this city, and consists of nine steel screw steamers. Some of these vessels have recently commenced regular sailings between this port and Montreal. The remainder ply between British and colonial and foreign ports. The latest addition to the fleet is the *Torr Head*, a twin screw steel vessel of 3,867 tons. In the matter of freight rates, the same conditions obtain as on the Lord Line.

The Liverpool Line.—This line is owned by the Belfast Steamship Company. There are five steel screw steamers on the line. The *Magic* is a newly constructed steamer, built by Harland & Wolff, of this city, and is the best equipped and finest steamer of the fleet. She is a steel twin screw steamer (as are all the others on the line), and has a net tonnage of 1,750. There are daily sailings between this port and Liverpool. The journey, a distance of 135 miles, is accomplished in about ten hours, and a large proportion of the passengers and freight between the north of Ireland and England is carried by this route. The passenger fares between the two ports are: Saloon, \$3.04; steerage, \$1.21; which includes berth, but not meals. The freight rates are very low at present, as competition is keen. They vary from 60 cents to \$3.65 per ton, according to the nature of the goods.

The Fleetwood Line.—This line is owned by and runs in connection with the Lancashire and Yorkshire and London and Northwestern Railway companies of England, and consists of five steel screw steamers. There are daily sailings between Belfast and Fleetwood. The London trains make connection with the boats at Fleetwood, and run alongside of them, the passengers being able to make the crossing from boat to train

by a covered passage. The passenger fares and freight rates are the same as to Liverpool, as the two are competing lines.

The Glasgow Line.—This line is owned by the Clyde Shipping Company of Glasgow and has seven boats in operation, which ply daily between Glasgow and Belfast. During the summer months there are two sailing each day, one by daylight and the other by night. The passenger fares are: Saloon, \$3.04; and steerage, 97 cents. The freight rates are somewhat higher than between this and English ports, ranging from \$1.21 to \$4.86 per ton.

At the present writing, the rates are very much demoralized, and it is quite difficult to get a paying charter for "tramp" steamers. In fact, ocean traffic is so dull that many steamships are laid up for want of business, and owners in many instances are selling their vessels at great sacrifices, whenever they can get purchasers, in order to save the expense of caring for them while not in use. Steamship builders report orders scarce and competition for what is going exceedingly keen and close.

The following table, taken from Lloyd's Register, gives the name, tonnage, horsepower of engines, size of cylinders, length of stroke, boiler pressure and condition, wherever same was specified, of all the steamers on the above lines:

Name of steamer.	Tonnage.	Horsepower.	Cylinders.	Stroke.	Pressure.
Clyde Shipping Company:					
Alligator.....	985	280	38½ and 69	48	.....
Dromedary.....	975	280	38½ and 69	48	.....
Gorilla.....	982	280	38½ and 69	48	.....
Hare.....	771	210	24, 38, and 58	42	140
Hound.....	1,061	350	.....	.....	.....
Grampus.....	698	180	36 and 64	36	.....
Seal.....	691	180	36 and 64	36	.....
Belfast Steamship Company:					
Magic.....	1,750	.....	.....	.....	.....
Caloric.....	1,748	170	18, 29, and 46	39	160
Mystic.....	726	219	.....	.....	.....
Optic.....	971	200	35 and 70	45	.....
Dynamic.....	937	200	35 and 70	45	100
Irish Shipowners Company:					
Lord Londonderry.....	2,409	240	23, 37, and 60	42	160
Lord Erne.....	5,610	418	.....	.....	.....
Lord Charlemont.....	3,138	320	24½, 37, and 64	48	160
Lord Bangor.....	2,991	300	24, 39, and 64	45	150
Lord O'Neill.....	2,751	350	37 and 72	45	90
Lord Landsowne.....	2,753	350	37 and 72	45	90
Lord Templemore, Lord Wolseley, and Lord Templeton a.....	.....	.....	.....	.....	.....
Belfast and Fleetwood Line:					
Duke of York.....	3,028	220	.....	.....	.....
Duke of Clarence.....	1,489	500	.....	.....	.....
Prince of Wales.....	1,568	518	43 and 77	84	.....
Earl of Ulster.....	1,165	350	34 and 64	72	.....
Princess of Wales.....	1,144	290	32 and 56	78	.....
Head Line:					
Torr Head.....	.....	.....	.....	.....	.....
Runmore Head.....	4,444	450	26½, 44, and 72	51	175
Innishowen Head.....	3,050	320	24½, 37, and 64	48	160
Bengore Head.....	2,490	275	34 and 68	45	90
Dunmore Head.....	2,230	275	22, 36, and 60	42	170
Teelin Head.....	1,668	200	31 and 60	42	85
Black Head.....	1,145	140	28 and 53	38	75
White Head.....	1,145	140	28 and 53	38	75
Fair Head.....	1,132	120	27 and 51	38	70

a Not registered in Lloyd's.

COAST LINES.

Besides the principal lines of steamships, there are daily sailings between this port and Barrow and Ardrossan and triweekly to Ayr. The boats carry freight and passengers. The freight and passenger rates are in proportion with the other lines. There is also a biweekly service to Dublin, Plymouth, Bristol, and London, and weekly to Cork, Cardiff, Waterford, and Southampton, but there is little accommodation for passengers on these boats. During the summer months, there is a daily excursion steamer to the Isle of Man and frequent daily excursion sailings to summer resorts along the coast.

CANALS.

There are three small canals in this district, which now all run in connection with each other and are owned by the same company. They are altogether $74\frac{1}{2}$ miles in length, and are connected with Loughs Neagh and Erne. Considerable quantities of coal, timber, slates, brick, and other heavy merchandise are carried up the country by this route. The canal boats, or lighters as they are called here, are owned by private individuals who pay toll to the company.

JAMES B. TANEY,
Consul.

BELFAST, *June 25, 1894.*

BELGIUM.

SITUATION AND BUSINESS OF ANTWERP.

While the railroad facilities of the province and city of Antwerp are quite sufficient for all purposes of inland travel and trade, it is as a port that the city of Antwerp invites most attention.

Antwerp is situated about 50 miles from the North Sea on the right bank of the River Scheldt, a river with the usual variations of tide, and navigable by ocean vessels of large size and tonnage.

Before detailing the various lines of ocean vessels coming into the port of Antwerp, a general idea of the volume of business is given in the following table, showing the number of arrivals and the total tonnage of the vessels during the last ten years:

Year.	Number of vessels.	Total tonnage.	Average tonnage per vessel.	Year.	Number of vessels.	Total tonnage.	Average tonnage per vessel.
1885.....	4,860	3,492,934	719	1890.....	4,532	4,517,098	999
1886.....	4,726	3,521,229	745	1891.....	4,461	4,698,238	1,052
1887.....	5,022	3,801,952	755	1892.....	4,321	4,500,091	1,042
1888.....	4,823	3,974,320	824	1893.....	4,418	4,662,211	1,062
1889.....	4,356	4,050,549	930	1894.....	4,640	5,008,923	1,080

The arrivals for the year 1894, according to nationality, were.

Flag.	Number of vessels.	Total tonnage.	Flag.	Number of vessels.	Total tonnage.
Austrian.....	12	19,339	Norwegian.....	259	147,327
Belgian.....	309	425,686	Portuguese.....	12	7,100
Danish.....	168	130,822	Russian.....	41	28,452
British.....	2,611	2,817,388	Spanish.....	46	38,859
French.....	125	111,133	Swedish.....	100	91,517
German.....	719	971,428	American.....	23	47,281
Greek.....	26	45,939			
Dutch.....	101	108,485	Total.....	4,640	5,008,983
Italian.....	28	23,117			

OCEAN LINES.

Red Star Line.—Among the ocean lines from Antwerp, the first in importance, at least so far as concerns business between Antwerp and the United States, is the Red Star Line, a private corporation, the majority of the stock of which is owned by citizens of the United States. All the steamers except two, the *Pennsylvania* and the *Illinois*, fly the Belgian flag. These two are under the American flag. The terminal points are Antwerp and New York and Antwerp and Philadelphia. The New York service is weekly (sometimes semiweekly), and carries first, second, and third class passengers; also, mail and freight. The Philadelphia service is fortnightly, and carries third-class passengers and freight.

The distance between Antwerp and New York is 3,344 miles and between Antwerp and Philadelphia 3,408 miles.

The rates for first-class passengers vary according to the steamer chosen, the season of the year, or the number of passengers occupying a stateroom, from \$65 to \$210 per person in the summer (between August 1 and October 15), and from \$60 to \$95 per person at other seasons of the year. A reduction of 15 per cent, each way, is allowed on all round-trip tickets, and these tickets are available for one year.

It is very difficult to answer with accuracy the inquiry as to rates of freight. The manager of the freight department informs me that the freight charges differ with different articles, and charges for the same article vary with the fluctuations in the freight market, which depend upon competition, the size of the cargo, the size of the shipment, and other causes. So far as a rule can be given, it may be said that the average charge, both to New York and Philadelphia, for heavy articles (those whose rate is determined by weight) is \$1.50 per ton; while for light articles (those whose rate is determined by the space occupied) the charge is \$5, and 10 per cent additional, per 40 cubic feet.

The fleet of the Red Star Line consists of the following steamers:

Name.	Tonnage.	Name.	Tonnage.
Friesland.....	7,116	Rhyndland.....	3,639
Westernland.....	5,736	Nederland.....	2,839
Voordland.....	5,212	Switzerland.....	2,816
Waesland.....	4,752	Pennsylvania.....	3,166
Pennland.....	3,740	Illinois.....	3,126
Belgenland.....	3,692		

All of the forgoing steamers are employed in the New York service, except the last three, which go to Philadelphia.

The Red Star Line keeps its ships in good condition. Besides the habitual inspection, cleaning, repairing, and painting, which occur at the end of every voyage, each steamer is put twice a year in the dry dock of the company, situated here, when the bottom is scraped and painted, and the steamer otherwise subjected to a thorough inspection and overhauling.

The *Friesland*, *Noordland*, and *Westernland* are built of steel; all the others of iron. The *Friesland*, *Waesland*, *Illinois*, and *Pennsylvania* have triple expansion, the others have compound engines; all are compartment steamers. The Antwerp, and general European agents of the Red Star line are Vonder Becke & Marsily.

North German Lloyd.—This line has, it is said, the largest fleet in the world; it consists of seventy-two vessels, and five more are now being built. Of these, forty have a tonnage of over 2,300, and twenty-six a tonnage, of over 4,500. The largest is the *Kaiser Wilhelm II*, tonnage, 6,991, closely followed by the *Spree*, *Havel*, and *Prince Regent Luitpold*, with tonnages of 6,963, 6,963, and 6,700, respectively.

The North German Lloyd Company is a private German corporation, with head offices in Bremen. It is engaged in the North and South American, the East Indian, Chinese, and Australian trade, and thus divides itself into distinct branches. All the ships start from Bremen.

There are four branches of the line which touch at Antwerp, and to these only, will reference be made. They will be distinguished by use of the terminal points, and are as follows:

(1) Bremen-Shanghai branch.—The steamers in this service, starting from Bremen, touch at Antwerp, Southampton, Genoa, Naples, Port Said, Aden, Colombo, Singapore, Hongkong, and stop at Shanghai. Prompt connection is made at Hongkong for the Japanese ports of Yokohama, Hiogo, and Nagasaki.

(2) Bremen-Sydney branch.—Starting at Bremen, calls are made at Antwerp, Southampton, Genoa, Naples, Port Said, Aden, Colombo, Adelaide, Melbourne, with Sydney as the terminus.

(3) Bremen-Santos branch.—Leaving Bremen, the steamers stop at Antwerp, Corunna, Bahia, Rio Janeiro, and finally, at Santos.

(4) Bremen-Buenos Ayres branch.—Starting from Bremen, stops are made at Antwerp, Lisbon, Montevideo, and Buenos Ayres, the terminus.

All of these branches carry first, second, and third class passengers; also mail and freight, and make monthly trips. The distances from Antwerp are:

To—	Miles.	To—	Miles.
Southampton	244	Adelaide.....	11,690
Genoa	2,378	Melbourne.....	12,175
Naples.....	2,714	Sydney.....	12,535
Port Said.....	3,824	Lisbon.....	1,120
Suez.....	3,911	Corunna.....	790
Aden.....	5,219	Bahia.....	4,690
Colombo.....	7,312	Rio Janeiro.....	5,400
Singapore.....	8,882	Santos.....	5,590
Hongkong.....	10,319	Montevideo.....	6,290
Shanghai.....	11,189	Buenos Ayres.....	6,875

Rates for first-class passengers from Antwerp are approximately as follows:

To—	Fare.	To—	Fare.
Genoa	\$43. 75	Melbourne.....	\$314. 25
Naples.....	58. 75	Sydney.....	325. 00
Port Said.....	87. 50	Cornhna.....	25. 00
Singapore.....	325. 00	Montevideo.....	150. 00
Hongkong.....	354. 00	Buenos Ayres.....	150. 00
Shanghai.....	380. 00	Rio Janeiro.....	137. 50
Adelaide.....	287. 50		

The inquiry as to the rates of freight is even more difficult to answer in connection with the North German Lloyd than with the Red Star Line, because there are so many ports of call, and consequently, so many different rates. It will be remembered also that (1) there are many classes of freight, as "first class," "third class," "dead weight," "munitions of war," etc.; (2) that the freight rates are constantly fluctuating; and (3) most important, that the rates for all large commercial transactions are usually determined by special agreement between the shipper and the company.

As there are so many vessels belonging to the North German Lloyd fleet, those engaged in the Antwerp trade, as above described, are often changed, but the ones usually coming to this port are:

Name.	Tonnage.	Name.	Tonnage.
Bayer.....	5,343	Dresden.....	4,802
Sachsen.....	5,343	Munche.....	4,801
Preussen.....	4,645	Weeser.....	2,823
Prince Regent Luitpold.....	6,700	Kolb.....	2,556
Braunschweig.....	3,173	Graf Bismarck.....	2,406

The Antwerp agents of the North German Lloyd Company are H. Albert de Bary & Co.

Peninsular and Oriental Steam Navigation Company.—This company, having a fleet of fifty ships, is a private English corporation, with head

offices in London. Ten of its steamers are engaged in the Antwerp trade as follows:

Name.	Tonnage.	Name.	Tonnage.
Aden	3,925	Japan	4,319
Bombay	3,216	Java	4,093
Canton	3,171	Malacca	4,045
Ceylon	4,094	Manila	4,210
Formosa	4,045	Shanghai	3,216

These are divided between two branches, which, indicated by the terminal points, are:

(1) Antwerp-Yokohama branch, touching at London, Gibraltar, Genoa, Naples, Malta, Brindisi, Port Said, Aden, Colombo, Singapore, Hongkong, Nagasaki, Hiogo, and Yokohama. Prompt connection is made at Aden for Bombay; at Colombo, for Madras and Calcutta, and at Hongkong, for Shanghai. The service is monthly.

(2) Antwerp-Sydney branch, calling at London, Gibraltar, Mediterranean ports, Port Said, Aden, Colombo, Albany, Adelaide, Melbourne, and Sydney. The service is monthly.

Besides freight, first and second class passengers are carried by both services, and mail is taken at London and Brindisi.

The distances and rates are about the same as those of the North German Lloyd Company, as the routes are almost identical.

The Antwerp agents are John P. Best & Co.

Union Steamship Company.—This is a private English corporation, with head offices in London. The line is engaged in the South African trade, and has Southampton for its English port of departure. From Southampton the service is weekly. The Antwerp service is monthly, and carries first, second, and third class passengers, freight and mail.

The steamers in the Antwerp service are often changed, but one of the following is usually employed:

Name.	Tonnage.	Name.	Tonnage.
Guelph	4,916	Trojan	3,471
Greek	4,747	Spartan	3,403
Gaul	4,744	Pretoria	3,193
Goth	4,738	Arab	3,192

The ports touched are Lisbon, Madeira, Teneriffe, Ascension, St. Helena, Cape Town, Mossel Bay, Knysna, Port Elizabeth, East London, Durban (Natal), Delagoa Bay, Mozambique, and Zanzibar. Calls at the smaller places are not made every trip, unless necessary to unload freight or passengers. Durban is the terminal port of the mail steamers, but other steamers of the same company proceed to Zanzibar once a month, stopping at intermediate points.

The distances from Antwerp are:

To—	Miles.	To—	Miles.
Southampton	244	Knyena	6,001
Lisbon	1,120	Port Elizabeth	6,886
Madeira	1,637	East London	6,963
Teneriffe	1,896	Durban	7,221
St. Helena	4,608	Delagoa Bay	7,514
Cape Town	6,398	Mozambique	8,441
Mossel Bay	6,644	Zanzibar	9,101

The rates for first-class passengers from Antwerp to the places mentioned are:

To—	Fare.	To—	Fare.
Lisbon	\$45.90	Knyena	\$198.80
Madeira	66.80	Port Elizabeth	198.80
Teneriffe	71.40	East London	204.00
St. Helena	183.60	Durban	209.10
Ascension	153.00	Delagoa Bay	219.30
Cape Town	183.00	Mozambique	255.00
Mossel Bay	198.90	Zanzibar	256.00

The Antwerp agents are John P. Best & Co.

Compagnie Belge Maritime du Congo.—This is a private Belgian corporation engaged in trade with that part of the West African Congo territory known as the Belgian Congo. The service is monthly, and carries first and second class passengers, freight and mail. The sailing date at Antwerp is the 6th of each month, and the rate for first-class passengers is \$160.

There are only three steamers engaged in this service, namely: *Leopoldville*, 3,460 tons; *Coomassie*, 2,902 tons; *Eduard Bohlen*, 2,367 tons.

The Antwerp agents are John P. Best & Co.

Kosmos Line.—This is a private German corporation, with Hamburg as the port of departure, engaged in the Chilean and Peruvian trade. The points touched are Antwerp, Falkland Islands, Punta Arenas, Corral, Coronel, Talcahuano, Valparaiso, Antofagasta, Iquique, Arica, Mollendo, Pisco, and Callao.

The service is fortnightly, and carries first, second, and third class passengers, freight, and mail.

The steamers are all compartment ships of steel or iron, and are:

Name.	Tonnage.	Name.	Tonnage.
Herodot	2,848	Ramses	3,634
Isis	2,645	Serapis	2,706
Kambysis	1,824	Tania	3,033
Memphis	3,873	Theben	1,686
Menee	1,714	Thotmes	1,808
Osiris	2,638	Luxor	3,900
Pentaur	2,808	Hather	3,900

The distances from Antwerp are:

To—	Miles.	To—	Miles.
Falkland Islands	7,350	Antofagasta.....	9,986
Punta Arenas	7,910	Iquique.....	10,216
Corral	8,950	Arica.....	10,318
Coronel.....	9,140	Mollendo.....	10,453
Talcahuano.....	9,176	Pisco.....	10,773
Valparaiso.....	9,406	Callao.....	10,939

The rates for first-class passengers from Antwerp are: To Falkland Islands, \$195; Punta Arenas, \$225; all remaining intermediate points and to Callao, \$300.

The Antwerp agents are August Bulcke & Co.

Puritan Line.—This is a private English corporation, which conducts a first-class freight business between Antwerp and Boston, and between Antwerp and Baltimore, once a month from each port.

The steamers engaged in this service are:

Name.	Tonnage.	Name.	Tonnage.
Storm King.....	3,279	Belgian King.....	3,354
Norse King.....	2,985	Otranto.....	2,379

The Antwerp agents are Thomas Ronaldson & Co.

Wilson Line.—This is a private English corporation, and runs a fortnightly freight service between Antwerp and New York. The steamers, together with their tonnage, are:

Name.	Tonnage.	Name.	Tonnage.
Marengo.....	2,273	Othello.....	2,479
Lepanto.....	2,287	Rialto.....	2,229

The Antwerp agents are August Bulcke & Co.

San Francisco Line.—This line runs sailing vessels of the first class monthly to the western coast of the United States. The ships carry only freight, grain in bulk for the most part. They touch at San Diego, Redondo, San Francisco, Portland, Port Townsend, Everett, Seattle, and Tacoma.

The Antwerp agents are John P. Best & Co.

Hamburg-Pacific Steamship Company.—This is a private German corporation, and runs a steamer regularly every fifteen or twenty days to the western coast of South and Central America. It carries first-class passengers and freight. The steamers call at the same ports as the Kosmos Line as far as Callao, and beyond Callao they call at Salaverry, Payta, Manta, Guayaquil, Punta Arenas (in Costa Rica) Corinto, San Juan del Sur, La Union, Amapala, La Libertad, Acajutla, San Jose de Guatemala, and stop at Champerico.

The steamers generally employed in the Antwerp service, together with their tonnage, are:

Name.	Tonnage.	Name.	Tonnage.
Adriana.....	4,500	Valeria.....	2,500
Delia.....	5,000	Miranda.....	4,000
Volumnia.....	5,000	Modestia.....	5,000
Lavinia.....	3,000		

The Antwerp agents are Grisar & Marsily.

Prince Line.—This is a private English corporation, and runs a monthly service for first, second, and third class passengers, and freight from Antwerp to Rosario, touching at London, Montevideo, and Buenos Ayres. The rate for first-class passengers is \$5 per day.

The steamers, together with their tonnage, are:

Name.	Tonnage.	Name.	Tonnage.
Asturian Prince.....	3,147	Afghan Prince.....	3,268
Italian Prince.....	3,083	Tartar Prince.....	3,268

The Antwerp agents are August Bulcke & Co.

Cork Steamship Company.—This is a private Irish corporation, and runs three services, as follows: Antwerp to Liverpool; Antwerp to Manchester, and Antwerp to Glasgow. Each service is weekly, and carries first-class passengers and freight. The rate for first-class passengers is \$5.50 from Antwerp to each of the termini.

The steamers engaged in these services are of steel and iron, and, together with their tonnage, are:

Name.	Tonnage.	Name.	Tonnage.
Egret.....	1,234	Bittern.....	972
Pfarmagan.....	1,234	Moorhen.....	1,756
Avocet.....	1,097	Onsel.....	816
Rallus.....	1,040	Whimbrel.....	649
Ibis.....	1,585		

The Antwerp agents are John P. Best & Co.

It will be observed that the lines given have been selected with a view to showing the connections of Antwerp with all parts of the world, and also because of the importance of the lines themselves. The remaining lines, therefore, will not be described with the same detail. They are:

Hansa Line.—Service monthly, for passengers and freight; destination, the ports of Brazil and of the Argentine Republic. Antwerp agents, Selb & Huverstahl.

Bossières Bros. of Havre.—Service monthly, for freight; destination, ports of Canada. Antwerp agent, D. Steinmann-Haghe.

Ross Line.—Service monthly, for freight; destination, ports of Canada. Antwerp agents, Thos. Ronaldson & Co.

White Cross Line.—Service monthly, for freight; destination, Boston and New York. Antwerp agents, Steinmann & Co.

New Orleans Line.—Service monthly, for freight; destination, New Orleans. Antwerp agents, Kennedy, Hunter & Co.

Cuban Line.—Service monthly, for passengers and freight; destination, Porto Rico and Cuba. Antwerp agent, D. Steinmann-Haghe.

Compagnie Générale Transatlantique.—Service monthly, for passengers and freight; destination, Havana and Mexican ports. Antwerp agent, A. Deppe.

La Flecha Navigation Company.—Service monthly, for passengers and freight; destination, Havana. Antwerp agents, Walford, de Baerdemaeker & Co.

Serra Line.—Service monthly, for passengers and freight; destination, Havana. Antwerp agents, Walford, de Baerdemaeker & Co.

West India Steam Navigation Company.—Service monthly, for freight; destination, Vera Cruz and other Mexican ports. Antwerp agents, Kennedy, Hunter & Co.

Bossière Bros.—Service monthly, for passengers and freight; destination, Martinique, Guadeloupe, and Venezuelan ports. Antwerp agent, D. Steinmann-Haghe.

Lampport & Holt Line.—Service monthly, for first, second, and third class passengers, freight, and mail; destination, the ports of Brazil. Antwerp agents, Kennedy, Hunter & Co.

Lampport & Holt Line.—Service fortnightly, for passengers, freight, and mail; destination, Montevideo, Buenos Ayres, and Rosario. Antwerp agents, Kennedy, Hunter & Co.

Royal Mail Steam Packet Company.—Service monthly, for passengers and freight; destination, the ports of Brazil and of the Argentine Republic. Antwerp agents, Ch. Huger & Co.

Antwerp and London-Brazil Line.—Service fortnightly, for passengers and freight; destination, Rio Janeiro and Santos. Antwerp agents, Ruys & Co.

Macandrews & Co., London.—Service monthly, for freight; destination, Montevideo, Buenos Ayres, Boca, and Rosario. Antwerp agents, Walford, de Baerdemaeker & Co.

Gellatly, Hankey, Sewell & Co. Line.—Service every ten days, for freight; destination, Montevideo, Buenos Ayres, Boca, and Rosario. Antwerp agents, Gellatly, Hankey, Sewell & Co.

Antwerp-Chile Line.—A line of first-class sailing vessels, with a monthly service for freight; destination, the ports of Chile. Antwerp agents, Ruys & Co.

Atlas Line.—Service monthly, for freight; destination, the ports of Portugal and of Morocco. Antwerp agent, A. Blumenthal.

Mersey Steamship Company.—Service fortnightly, for freight; destination, Gibraltar, the ports of Morocco, and the Canary and Madeira islands. Antwerp agents, W. H. Müller & Co.

British India Steam Navigation Company.—Service monthly, for passengers and freight; destination, the eastern coast of Africa, as far as Zanzibar. Also, service monthly, for passengers and freight; destination, Bombay and Kurrachee. Antwerp agents, Gellatley, Hankey, Sewell & Co.

Hansa Line.—Service monthly, for passengers and freight; destination, Bombay, Madras, and Calcutta. Antwerp agents, Selb & Huverstuhl.

Hamburg-Calcutta Line.—Service monthly, for passengers and freight; destination, Madras and Calcutta. Antwerp agents, Grisar & Marsily.

Union Line.—Service monthly, for passengers and freight; destination, Penang, Singapore, Hongkong, Shanghai, Yokohama, and Hiogo. Antwerp agents, Eiffe & Co.

China Shippers Mutual Steam Navigation Company.—Service monthly, for passengers and freight; destination, the ports of China and Japan. Antwerp agents, Walford, de Baerdemaeker & Co.

Shire Line.—Service fortnightly, for passengers and freight; destination, the ports of China and Japan. Antwerp agents, Selb & Huverstuhl.

Glen Line.—Service monthly, for freight; destination, the ports of China and Japan. Antwerp agents, Ruys & Co.

Anglo-Australasian Company.—Service monthly, for freight; destination, the ports of Australia. Antwerp agents, Kennedy, Hunter & Co.

Antwerp European lines.—In addition to the foregoing lines, there are about sixty others engaged in the trade between Antwerp and other European ports. The majority of these lines, going to England, Denmark, Sweden, and Russia, carry first-class passengers in addition to freight; but those going to ports of France, Germany, Holland, Italy, Spain, Portugal, and Turkey do not, as a rule, carry first-class passengers because the railroad traveling is much quicker. The following are some of these lines, the terminal points in most cases alone being given:

Antwerp to London, Antwerp to Grimsby, Antwerp to Leith, Antwerp to Hull, Antwerp to Newcastle, Antwerp to Plymouth, Antwerp to Bristol, Antwerp to Liverpool, Antwerp to Glasgow, Antwerp to Gloucester, Antwerp to Dublin, Antwerp to Belfast, Antwerp to Rotterdam, Antwerp to Amsterdam, Antwerp to Mannheim, up the River Rhine, Antwerp to Hamburg, Antwerp to Stettin, Antwerp to Dantzig, Antwerp to St. Petersburg, Antwerp to Riga, Antwerp to Copenhagen, Antwerp to Stockholm, Antwerp to Christiania, Arendal, and Christiansand, Antwerp to Bordeaux, Antwerp to Havre; Antwerp to Havre, the ports of Spain and Portugal, and Marseilles; Antwerp to Marseilles and Genoa; Antwerp to Rotterdam, Marseilles, and Leghorn; Antwerp to the ports of the Adriatic Sea as far as Trieste; Antwerp to

Constantinople, Batoum, Sebastopol, and Odessa; Antwerp to the ports of the Black Sea; Antwerp to Alexandria, Smyrna, and Constantinople; Antwerp to the Sicilian ports; Antwerp to Harwick.

The Antwerp-Harwick is a high-class line, and runs a daily service for first and second class passengers. The passage is made in twelve hours, and the run from Harwick to London occupies two hours. The steamers are all of iron or steel, are very comfortable and are much patronized.

The Ostend-Dover line, although the steamers do not come to Antwerp, is owned by the Belgian Government. It runs three services daily, and the passage is made in three hours. The steamers carry, in addition to first and second class passengers, the continental mail.

RAILROADS AND WATERWAYS.

The railroad facilities in the consular district of Antwerp, and in all of Belgium as well, are of the first order. A large majority of the lines are owned by the Government, and all of them are under Government control. The administration and direction of the railroads, together with that of the post and telegraph offices, constitutes a special and distinct branch of the national ministry or cabinet, the chief officer of which holds the title of minister of railways, posts and telegraphs.

All the principal lines have double tracks, among which may be mentioned the following:

- (1) Antwerp to Rosendael, Rotterdam, The Hague, Amsterdam and points beyond.
- (2) Antwerp to Malines, Brussels, Mons, Paris and points beyond.
- (3) Antwerp to Malines, Lourain, Liege, Verviers, Aix-la-Chapelle, Cologne and points beyond.
- (4) Antwerp to Termonde, Ghent, Bruges, and Ostend.
- (5) Antwerp to Ghent, Lille and points beyond.

The rates for passengers can be seen from the following table:

Trains.	Class.	Rate per mile.	Trains.	Class.	Rate per mile.
Express trains:		<i>Cents.</i>	Ordinary passenger trains:		<i>Cents.</i>
Single-trip tickets.....	First.....	3	Single-trip tickets.....	First.....	2½
	Second.....	2½		Second.....	1½
	Third.....	1½		Third.....	1½
Round-trip tickets.....	First.....	2½	Round-trip tickets.....	First.....	2
	Second.....	1½		Second.....	1½
	Third.....	1½		Third.....	1

Freight in Belgium is transported more by water than by rail. In fact, practically all heavy freight, such as iron, cement, hides, grain, lumber, cotton, etc., is transported by water.

Belgium is traversed by two large rivers, the Scheldt and the Meuse, and by several small ones, chief among which are the Rupel and the Sambre. Almost all are navigable. To these, may be added a number of canals, most of which are narrow, but navigable for small boats,

which are usually drawn by horses or persons on the banks, or by small steam tugs.

There is navigable water connection between Antwerp and Brussels, Liege, Ghent, Bruges, Lourain, Mons, Charleroi, Namur, Tournai, and other places.

The freight charges are very light, varying with the season, the amount of freight, the kind or class, etc.

The basis, however, is from 1 to 4 francs (19.3 to 77.2 cents) per ton, according to the distance.

HARVEY JOHNSON,
Consul.

ANTWERP, *March 26, 1895.*

HOLLAND.

RAILWAYS.

There are two main steam railways in the Netherlands, viz: The Staatsspoorweg (State railway) and the Hollandsche Yzeren Spoorweg (Dutch railway). The former was built by the Government and leased for a period of years to a private corporation known as the Maatschappij tot Exploitatie van Staatsspoorwegen; the latter was constructed and is controlled by a private corporation known as the Hollandsche Yzeren Spoorweg Maatschappij. Both corporations are under the supervision of a board of survey, under the minister of marine, commerce and industry. The members of this board are appointed by the Queen to secure the safety of traffic. They are also under the supervision of a Government commissioner and assistant commissioner appointed by the Queen to control the finances.

State Railway (Staatsspoorweg).—The Staatsspoorweg, headquarters at Utrecht, on the 1st of January, 1894, controlled 1,055.7 miles of railway. The rolling stock consists of 447 engines, 1,699 passenger and luggage vans, and 7,520 freight cars.

In 1893, 5,584,939 tons of goods were carried over the whole line, at the average rate of 61½ cents (American) per ton.

As highways of commerce, the following lines are to be considered:

Amsterdam, Emmerich and Rotterdam, and Utrecht and Arnhem, with direct trains and Pullman car trains to and from Germany. The part of this line which was first opened is that from Amsterdam to Utrecht (on the 28th day of December, 1843). Communication with Arnhem was established in 1845. The Rotterdam branch to Utrecht was finished in 1855. In 1856, the German frontier was reached, and through communication established with the German State Railway at Emmerich. The length is: Amsterdam to Utrecht, 21.7 miles; Rotterdam to Utrecht, 32.9 miles; Utrecht to Emmerich, 54.7 miles; total, 109.3 miles.

The principal bridge is the Rhine bridge, near Westervoort, 843 feet in length.

The first-class passenger fares are: Amsterdam to Utrecht, 72 cents; Arnhem, \$1.60; Emmerich, \$2.14. Rotterdam to Utrecht, \$1; Arnhem, \$1.80; Emmerich, \$2.40.

The daily average number of trains running between Amsterdam (Rotterdam branch included) and Emmerich is: Pullman car trains, 2; express trains, 14; slow trains, 8; goods trains, 12.

(2) The route from Amsterdam to Utrecht, Tilburg, Breda, Rosendaël, and Eschen (Belgian frontier), is the highway of commerce between Amsterdam and Brussels and Paris. For passenger traffic, through trains—Amsterdam to Paris—are run, carrying sleeping cars. In 1855, Breda was connected by rail with the Belgian frontier, via Rosendaël. In 1863, the line from Tilburg to Breda was finished; in 1870, that from Utrecht to Bois le Duc; in 1881, the Tilburg Bois le Duc portion was opened. The length of this line is as follows: Amsterdam to Utrecht, 21.7 miles; Utrecht to Bois le Duc, 30.4; Bois le Duc to Tilburg, 14.3; Tilburg to Breda, 13; Breda to Rosendaël, 15.6, and Rosendaël to Eschen, 5; a total of 100 miles.

The principal bridges on these lines are: Lek bridge, near Culemborg, 2,181 feet long; Waal bridge, near Zalt Bommel, 2,857 feet; and Maasbridge, near Hedel, 2,345 feet.

The first-class passenger rates from Amsterdam are: Utrecht, \$2.72; to Bois-le-Duc, \$1.50; to Breda, \$2.08; to Rosendaël, \$2.30; to Eschen, \$2.90.

Eight express trains, 10 slow trains, and 12 freight trains are operated on these lines.

(3) Line from Flushing to Rosendaël, Breda, Bokstel, Eindhoven, and Venlo (German frontier.) At Flushing through communication with England is obtained by the royal mail steamers of the Zeeland Steamship Company, all of which are about 1,700 tons burden and from 3,000 to 4,000 horsepower, running, if necessary, 17 to 18 knots an hour. This mail route was established in 1877. The length of the lines is 130.4 miles, viz: Flushing to Rosendaël, 46.6; Rosendaël to Breda, 15.5; Breda to Boxtel, 23.6; Boxtel to Eindhoven, 12.4; Eindhoven to Venlo, 32.3.

The Maas bridge, near Venlo, is 744 feet in length.

The first-class passenger rates from Flushing are: To Rosendaël, \$1.40; to Breda, \$1.80; to Boxtel, \$2.30; to Eindhoven, \$2.60, and to Venlo, \$3.30.

Six fast trains, 10 ordinary passenger trains, and 6 freight trains are operated on these lines daily.

(4) Line from Amsterdam to Utrecht, Boxtel, Eindhoven, Hasselt, and Liege. The Liege-Hasselt-Eindhoven line was built during the years 1864 to 1866, and the Eindhoven-Boxtel-Bois le Duc line in 1866. (For particulars of the Bois le Duc-Amsterdam line, see above.) The

length of the line is 136 miles, viz: Amsterdam to Utrecht, 21.7; Utrecht to Boxtel, 37.9; Boxtel to Eindhoven, 11.8; Eindhoven to Hasselt, 37.3; Hasselt to Liege, 27.3.

The first-class fares for passengers from Amsterdam are: To Utrecht, 72 cents; to Boxtel, \$1.80; to Eindhoven, \$2; to Hasselt, \$2.96, and to Liege, \$3.42.

Two express trains, 4 slow trains, and 10 freight trains run daily between Amsterdam and Liege.

Dutch Railway (Hollandsche Spoorweg).—The total length of the line of the Hollandsche Spoorweg is 768 miles. The capital is 22,500,000 florins (\$9,045,000), in 22,500 shares of 1,000 florins (\$402) each, and is all paid up.

Under a new contract with the Dutch Government, dated January 21, 1890, the Hollandsche Spoorweg was reorganized and received new franchises. Under this contract, the corporation distributes the net profits, not exceeding 4 per cent of the capital, to the shareholders. The remainder of the profits is divided equally between the Government and the shareholders, till the proportion of the shareholders amounts to 6½ per cent, including the above-mentioned 4 per cent. The balance must be divided on the basis of four-fifths to the Government and one-fifth to the shareholders.

The following dividends have been declared: 1840 to 1849 (average), 3 per cent; 1850 to 1859 (average), 3¾ per cent; 1860 to 1869 (average), 6 per cent; 1870 to 1879 (average), 6¼ per cent; 1880 to 1889 (average), 6½ per cent; in 1890, 4¾ per cent; in 1891, 2 per cent; in 1892, 1½ per cent; in 1893, 2½ per cent.

The corporation has recently contracted for new loans to the amount of 53,000,000 florins (\$21,306,000); 18,000,000 florins (\$7,236,000) at 3 per cent, and 35,000,000 florins (\$14,070,000) at 3½ per cent.

The termini of the various railways starting from Amsterdam, are: Helder, Leenwarder, Zwolle, Salsbergen, Winterswyk, Cleve, Venlo (last four on German frontier), Rosendaël (Belgian frontier), Haarlem, Hagne, Rotterdam, and Hoek of Holland.

At the Hoek of Holland, direct communication with England is afforded by steamers. This route was established June, 1893.

Passenger rates, per kilometer (0.62137 mile), are as follows:

Tickets.	First class.	Second class.	Third class.
Single-trip	Cents. 2	Cents. 1.6	Cents. 1
Round-trip	2.4	1.9	1.2

The freight rates, in slow trains, per long ton (2,204.6 pounds) are as follows:

Distances.	In part loads.	Special goods in part loads.	Goods in full loads.		
			Class A.	Class B.	Class C.
Terminal charges.....	a \$0.28	a \$0.28	\$0.20	\$0.20	\$0.20
Freight per kilometer (0.62187 of a mile) for distances—					
From 1 up to 50 kilometers (31 miles).....	.016	.014	.012	.01	.008
From 51 to 150 kilometers (93 miles).....	.012	.01	.01	.008	.004
From 151 to 250 kilometers (156 miles).....	.008	.01	.008	.004	.004
Over 250 kilometers.....	.004	.04	.004	.004	.004

a Including costs of loading and unloading.

The rates for express goods are double the rates for slow-train goods in part loads or in full loads. Fractions of a cent to be charged as a cent.

The rates on goods in part loads and on special goods are applied to consignments of less than 5,000 kilograms (11,023 pounds); those of Classes A and B on consignments of at least 5,000 kilograms, and those of Class C on consignments of at least 10,000 kilograms (22,046 pounds) per used truck.

The principal bridges of the Hollandsche Spoorweg are: Dordrecht-Geldermalsen, crossing the River Merwede; Amersfoort-Kesteren, crossing the River Rhine, and Apeldoorn-Deventer, crossing the River Yssel.

OCEAN LINES.

The *Netherland American Steamship Company*, headquarters at Rotterdam, is controlled by the *Nederlandsche Amerikaansche Hooivaart Maatschappij*. The steamers of this line sail twice a week from Rotterdam to New York, calling at Boulogne sur Mer, and twice a month from Amsterdam to New York.

The steamers, with tonnage and horsepower, are:

Name.	Registered tonnage.	Horse-power.	Name.	Registered tonnage.	Horse-power.
Amsterdam.....	3,629	375	Rotterdam.....	3,329	300
Didam.....	2,751	450	Spaarndam.....	4,539	600
Dubbeldam.....	2,700	450	Schiedam.....	2,745	300
Edam.....	3,130	500	Veendam.....	3,986	600
Maasdam.....	3,984	600	Werkendam.....	3,657	400
Obdam.....	3,245	400	Zaandam.....	3,063	500
P. Caland.....	2,584	350			

The first-class passenger rates vary, according to the season, the steamers and the locations thereon, from \$55 to \$74.

The company reports that so much depends upon the nature of the goods and the countries in which they originate, that it is impossible to give a fixed tariff for freights.

The Royal West Indian Mail Service (Koninklyke West Indische Mail-dienst), headquarters at Amsterdam, is controlled by two corporations, viz, Lloyds Veritas and the Netherland Society of Underwriters.

The steamers of this line sail every three weeks from Amsterdam to New York, via Paramaribo, touching at Demerara, Trinidad, Carupano, Cumana, Guanta, La Guayra, Porto Cabello, Curacao, Jacmel, Aux Cayes, and Port au Prince.

Returning from New York the steamers touch at all these points, and also call at Havre, en route to Amsterdam.

The steamers, with tonnage and horsepower, are:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Oranje Naasau.....	1,804	750	Prins Willem II.....	1,950	1,250
Prins Maurits.....	1,810	750	Prins Willem III.....	1,950	1,250
Prins Frederik Hendrik...	1,642	1,200	Prins Willem IV.....	1,950	1,250
Prins Willem I.....	1,950	1,250			

The steamers carry first-class passengers to the West-Indian ports only. The rates are from \$160 to \$182.

This company reports that it is impossible to give a fixed tariff for freights.

The Netherlands Steam Navigation Company (Stoomvaart Maatschappij Nederland) is a joint stock company established at Amsterdam in 1870, with a funded capital exceeding 5,000,000 guilders (\$2,000,000). The termini are Amsterdam, Batavia, Samarang, and Soerabaya. The main points touched are Southampton, Genoa, Port Said, Suez, and Padang. Length of total line: Amsterdam to Batavia, 2,269 geographical miles; Batavia to Samarang, 58; Samarang to Soerabaya, 95; mail route, Genoa to Batavia, 1,706.

There is a fortnightly mail service and a cargo line between Holland, Padang, and Java, occasionally calling at Hamburg.

The steamers, with tonnage and horsepower, are:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Burgemeester dam Tex....	3,000	500	Prinsees Amalia.....	3,500	550
Conrad.....	3,100	400	Prinsees Marie.....	2,800	400
Koningin Regentes.....	3,700	550	Prinsees Wilhelmina.....	2,600	400
Prins Alexander.....	3,000	500	Prinsees Sophie.....	3,500	550
Prins Hendrik.....	3,500	550	Sumatra.....	2,600	400

First-class passenger rates are: From Amsterdam to Genoa, \$60; Port Said, \$100; Batavia and Padang, \$320. Batavia and Padang to Amsterdam, \$300; Genoa, \$252; Port Said, \$212.

EDWARD DOWNES,

Consul.

AMSTERDAM, May 10, 1895.

DENMARK.

OCEAN LINES.

Thingvalla Steamship Company.—The most important ocean line, in connection with the foreign trade and commerce of Denmark, and the line best known to travelers between the United States and Scandinavia, is the Thingvalla Steamship Company, Limited. It was established in 1879 to meet the demands of the increasing trade and passenger traffic between the three Scandinavian countries and the United States. Before the establishment of this line, merchandise to and from these countries was sent indirectly, and of course with increased risk and expense. Passengers also were compelled to travel either via Great Britain or continental ports, at an additional outlay of time and money. This business is now done largely by the Thingvalla Line, which is operated and controlled by a board of directors with headquarters in Copenhagen, and is free from Government interference.

The company's fleet consists at the present time of five steamships, as follows:

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Amerika	4,058	3,000	Island.....	2,844	2,300
Hekla.....	3,258	2,200	Thingvalla.....	2,525	1,000
Norge.....	3,358	1,400			

These steamers ply between Copenhagen and New York, calling at Christiania and Christiansand, in Norway. As a rule, the steamers when in Copenhagen make a trip to Stettin to discharge and load cargo from and to the United States. Passengers, however, are not booked for passage from Stettin.

From Copenhagen to New York, the distance over this route, going via the north of Scotland, is nearly 3,810 miles. From Copenhagen to Christiania it is 275 miles, and to Christiansand, 440 miles. The steamers of the line run a fortnightly service between these ports, leaving New York every alternate Saturday from the pier at the foot of Fourth street, Hoboken and every alternate Tuesday from Copenhagen, leaving Christiania on Thursday and Christiansand on Friday. During the busy season an extra passenger steamer is put on to accommodate the large number of tourists and travelers visiting Scandinavia and the North Cape of Norway. This "land of the midnight sun" is rapidly becoming a favorite resort of American sightseers, and the Thingvalla Line offers the most direct route to tourists and travelers visiting Norway. The rates for first-class passage are quite reasonable, varying in the summer from \$60 to \$75, according to location and number of berths in stateroom. In winter, the rates on some of the steamers are \$10 less. On account of these inducements, the Thingvalla Line does its

fair share of passenger traffic and is steadily gaining favor with Americans.

Freight rates vary according to the New York markets and the different classes of goods shipped. The mean freight rate during 1893 was \$4.82 per ton going east and \$3.21 per ton going west.

During the year ending December 31, 1893, the company transported 2,565 cabin passengers, 17,269 third-class or steerage passengers, and 78,108 tons of freight.

United Steamship Company.—This company (Det Forenede Dampskib Selskab), the largest and most powerful concern in the Danish merchant marine, with a fleet at present consisting of 112 vessels, varying in size from coasters of 100 tons burden to ocean steamships of 2,100 tons, maintains a regular packet service between Copenhagen, the home port and headquarters of the company, and all the principal European ports, including important points on the Mediterranean, the Adriatic, the Archipelago, and the Black Sea. This line is not under Government control, but receives a subsidy for making regular sailings and carrying the mails between Copenhagen and the Faroe Islands and Iceland, and carrying provisions between Esbjerg, in Jylland, and Parkeston, in England.

A steamer leaves Copenhagen for the Faroe Islands and Iceland every fourteen days. The three steamers plying on this route are:

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Laura.....	1,068	150	Nidaros.....	859	100
Thyra.....	830	90			

The run from Copenhagen to Reykjavik, the terminus of the line, is made in the schedule time of twelve days. The price of a first class ticket to the Faroe Islands is 70 kroner (\$18.76), and to Iceland 90 kroner (\$24.12). These rates are exclusive of living aboard, which, in the first-class cabin, is 4 kroner (\$1.07) per adult per day.

From Copenhagen to Christiania direct, and vice versa, there are two trips weekly by the *C. P. A. Koch*, of 1,149 tons and 173 horsepower, and the *M. G. Melchior*, of 1,153 tons and 200 horsepower. A first-class ticket costs 28 kroner (\$7.50), exclusive of living aboard.

Besides these direct boats, there are smaller vessels running between Copenhagen and Christiania and calling at intermediate points on the Christiania Fjord.

Between Copenhagen and all points on the coast of Norway between Frondheim and Christiansand, there is a steamer once a week both ways. The following steamers are at present running on this route:

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Axelhuus.....	659	90	Tula.....	700	100
Christiansund.....	580	85			

The price of a first-class ticket to Frondheim is 55 kroner (\$14.74); to Christiansand, 24 kroner (\$6.43).

This company also runs a regular packet line from Copenhagen to the following Baltic ports, except when prevented in the winter season on account of ice:

To—	Trips.	Fare.	
		Danish money.	Equivalent in United States money.
		<i>Kroner.</i>	
St. Petersburg	Weekly	45.00	\$12.06
Hango	do	36.00	9.65
Riga	Fortnightly	36.00	9.65
Libau	Semiweekly	27.00	7.24
Konigsberg	Weekly	31.35	5.72
Dantzic	do	21.35	5.72
Stettin	do	16.00	4.29
Hamburg	Semiweekly	16.00	4.29

There is also a regular service between Copenhagen and England, as follows: To London, weekly, fare 45 kroner (\$12.06); to London, via Esbjerg and Parkeston, triweekly, fare 56 kroner (\$13.33); to Hull, weekly, fare 45 kroner (\$12.06).

The following steamers run on the routes:

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Copenhagen and London:			Copenhagen and Hull:		
Christian IX	1,236	120	Frederick	1,114	120
Perna	1,132	150	Louise	1,115	120
Kasan	1,132	150			
Vendsyssel	793	100			

In addition to the foregoing lines, the United Steamship Company maintains a regular service between the Baltic Sea (Copenhagen always being the port of departure) and Spain, Portugal, Marseilles, Italy, and Sicily. About every twenty days there is a departure for Marseilles and Italy, and every ten days a departure for Spain. The ports of call on this route are: Oporto, Lisbon, Malaga, Carthagen, Valencia, Tarragona, Barcelona, Marseilles, Genoa, Leghorn, and Naples.

The steamers plying on the line are:

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Veuv	949	100	J. C. Jacobsen	1,227	120
Dagmar	1,175	120	Chr. Broberg	1,227	120
Baron Stjornblad	999	180	Kiew	1,122	150
O. B. Suhr	1,506	150			

The company's steamers will also call at any other ports in Spain, France, Portugal, or Italy should sufficient inducement in the way of freight be offered, and also at ports on the African coast when there may be cargo in the market for the north. Goods are taken to Huelva and Seville on through bills of lading, with transshipment at Cadiz.

Between Copenhagen and Bordeaux, three or four steamers are kept constantly running, so as to make a trip in both directions about fortnightly. In April and September fast boats are dispatched from Copenhagen to Madeira, taking passengers and goods to and from all northern ports. These boats running to the Mediterranean are adapted more especially to the freight trade, but a limited number of passengers can be accommodated with berths and private cabins at the following rates from Copenhagen, exclusive of living expenses aboard: To Havre, Rouen, and Dunkirk, 54 kroner (\$14.47); to Bordeaux, 72 kroner (\$19.30); to Portugal, 108 kroner (\$28.94); to Spain and Italy, 126 kroner (\$33.77).

Vessels also run to the Levant and Black Sea every fourteen days. The points of call on this route are: Antwerp, Algiers, Tunis, Piræus, Smyrna, Salonica, Constantinople, Sebastopol, and Odessa. The company's fleet at present engaged in this trade is as follows:

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Antwerp.....	1, 713	130	A. N. Hansen.....	1, 506	150
Georgios I.....	1, 617	150	Tomak.....	1, 590	130
Leopold II.....	1, 618	150	L. P. Holmblad.....	2, 141	173
Omsk.....	1, 591	180	Castor.....	1, 259	110
Alexander III.....	1, 842	190			

By special agreement with the Belgian Government, freight not above 2,000 kilograms (4,409 pounds) may, since the 1st of January, 1894, be forwarded on through bills of lading from all railway stations in Belgium to the various ports on this company's route.

Goods are taken at through rates, with transshipment at Copenhagen to and from all ports mentioned in the above list and all ports in Germany, Denmark, Norway, Sweden, Russia, and Finland. Goods are also taken at through rates, with transshipment at Tunis, Piræus, Smyrna, and Odessa to points in the north of Africa, Greece, Asia Minor, and the Black Sea. A limited number of passengers can be accommodated on all the ships in the Black Sea trade. A cabin ticket to any of the ports mentioned above, exclusive of living aboard, can be had for 180 kroner (\$48.24).

As to the rates charged for freight by the United Steamship Company I regret that my efforts in this direction have not been successful. I can only quote the answer of Mr. Norman, the general manager, in reply to my letter of inquiry. He writes: "As to freights on our lines between the different ports, I regret that I am not able to give you any information, the rates fluctuating according to the conditions, which may be favorable at one time and unfavorable at another."

Scandia line.—This line is largely engaged in the freight trade between Copenhagen and New York, but is not allowed to take passengers at Danish ports. Passengers from Denmark can, however, ship by the Scandia Line by crossing the sound to Helsingborg, Sweden.

Copenhagen is only a port of call on this line, the home port being Stettin, and the line itself being a part of the Hamburg-American Line.

The following steamships comprise the present fleet of the company:

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Virginia	2,884	350	Slavonia	2,274	250
Polynesia	2,196	270	Venetia	2,891	350

The rates for freight on this line are the same as on the Thingvalla Line, viz, \$4.82 per ton going east and \$3.21 per ton going west. Of course, only the mean or average rate is intended by these figures, as the rates will vary according to the state of the market and the character of the goods.

RAILWAYS.

All the lines which carry through mails, freight, etc., belong to the State except a line of 45 kilometers (27.96 miles) from Orehoved to Gjedser, Island of Falster, which belongs to a private corporation, but is under Government control.

There are three main lines running out of Copenhagen, the great railway center of Denmark—the north, south, and west lines. Mails, passengers, and freight to and from the Continent and England go by the south and west lines, and to Sweden and Norway by the north line.

South line.—This line, extending from Copenhagen to Kioge, 55 kilometers; to Nastved, 92 kilometers; to Gjedser, the terminus, 157 kilometers—97.56 miles, is the most direct line to east, middle, and south Germany, via Warnemunde and Rostock (Mecklenburg), reaching Berlin by express train in eleven and one-half hours. Between Copenhagen and Gjedser, passengers, freight, etc., are carried over the distance between Masnedsund, Island of Sjælland, and Orehoved, Island of Falster, by steam ferry in ten to fifteen minutes; and from Gjedser, Falster, to Warnemunde, Germany, in two hours, twice daily. From Warnemunde there are trains to all parts of Germany.

West line.—This line, extending from Copenhagen to Roskilde, 32 kilometers; Ringsted, 64 kilometers; Korsor, the terminus, 112 kilometers—69.60 miles, is the most direct line to west Germany, France, and England, via Hamburg. The running time from Copenhagen to Hamburg is twelve and one-half to thirteen and one-half hours by two different routes: (1) Via Kiel by comfortable mail steamers from Korsor, about seven hours, twice daily, and by train from Kiel to Hamburg; (2) via Nyborg, Island of Fyen, and Fredericia, Jutland, by large steam ferryboats, carrying from six to ten railway carriages, with passengers' baggage, and freight, from Korsor to Nyborg in one and one-half hours; thence by railway to Strib; thence by steam ferry, carrying four to six railway carriages, to Fredericia in ten minutes; thence by train to Hamburg—twice daily.

Part of the traffic to and from England is also carried from Copenhagen, via Nyborg and Fredericia, to Esbjerg (west coast of Jutland), in eight and one-half hours from Copenhagen, and from Esbjerg to Harwich (near London) by steamers, three or four times weekly, in twenty-eight or thirty hours from Esbjerg to London.

North line.—This line, from Copenhagen to Elsinore (45 kilometers—27.96 miles), is the most direct line from Copenhagen to Norway and West Sweden. From Elsinore, passengers, freight, and railway cars are carried by steam ferryboats (same size as between Korsor and Nyborg) in fifteen minutes to Helsingborg, Sweden; thence by train to Gothenberg (eight and one-half hours from Copenhagen), and thence to Christiania (twenty hours from Copenhagen), twice daily. Fredericksborg and Fredensborg are the most important points on this line.

In Jutland, there are also trains from Fredericia, in connection with trains from Hamburg, to Gothenberg by steamer from Frederikshavn (North Jutland) daily, and to Christiansand, Norway, twice a week.

All these lines being under strict Government control and inspection are considered to be in excellent condition. They all have a single track and run two express or mail trains daily and from three to six slow or accommodation trains, as the demands of business may require.

The rates for first-class passenger travel are about $5\frac{1}{2}$ ore ($1\frac{1}{2}$ cents) per kilometer (0.6214 mile). It should be mentioned, however, that the great majority of the people travel second class. The difference in the appointments and conveniences of the two classes of coaches can scarcely be observed, it being practically a distinction without a difference.

Freights are divided into four classes, according to the quantity and character of goods.

Through traffic.—The rates on freight coming into and passing through Denmark in whole car loads, say of 5,000 kilograms (11,023 pounds), from Wamdrup, on the German border, are, per ton of 1,000 kilograms (2,204 pounds), according to the class of goods (first, second, third and fourth): To Copenhagen, 283 kilometers (175.86 miles), \$1.42, \$1.61, \$2.04, and \$2.71. To Elsinore, 328 kilometers (203.8 miles), \$1.55, \$1.77, \$2.22, and \$2.87. To Helsingborg, Sweden, by ferry from Elsinore, 388 kilometers (241 miles), \$1.58, \$1.80, \$2.26, and \$2.92.

There is neither river nor canal navigation in Denmark.

HIGHWAYS.

The country being level, with no great obstacles to overcome in the construction of roads, the Kingdom of Denmark has probably the best public highways in Europe. Wherever the railroad runs, there runs the corresponding "King's highway," 40 feet wide, with ditches on each side 4 to 5 feet deep, and, in most cases, with shade trees on each side. The roads are built of stone and gravel, packed and rolled smooth; and there being no great distances to contend with, they are always in

splendid condition. In the Island of Sjælland, the principal highways run from Copenhagen to Elsinore, from Copenhagen to Korsør, and from Copenhagen to Masnesund. To Elsinore, there are two highways, the Kongevej or "King's highway," which runs parallel with the railroad, and the Strandvej, running along the sound. In the Island of Fyen, the principal highway runs from Nyborg, via Odense, to Middlefart.

In Jutland, the highway runs from Fredericia to Frederikshavn, in the north, via Aarhus and Aalborg; from Randers, it runs westward to Lemvig, and thence southward along the west coast to Ribe.

ROBT. J. KIRK,
Consul.

COPENHAGEN, *September 25, 1894.*

FRANCE.

TRANSPORTATION FACILITIES

France is in direct communication, from her leading ports—Marseilles, Havre, Bordeaux, etc.—with all the important seaports of the world. She has, also, the advantage of the facilities and competition afforded by the many lines of maritime transportation connecting the chief British ports—London, Liverpool, Southampton, etc.—with every seaport on the globe, it being but a few hours by water, or water and rail, from Havre, Calais, or Boulogne to the most distant of these cities. An extensive coastwise service is also in operation, and there is regular and frequent communication by water between the numerous French ports on the British Channel, the Atlantic Ocean, and the Mediterranean Sea.

The various facilities for interior transportation are of the best, consisting not only of a network of railways, but also of the great rivers, an extensive canal system, and a system of public highways unsurpassed, if not unequalled, in any other country, and which extends to every part of the Republic. Altogether, the facilities enjoyed by the people of France, within the country, as well as for external traffic, are certainly not inferior to those of any other country in Europe, with the possible exception of the United Kingdom. The ocean and coastwise service is constantly being enlarged; the railway system is being developed, not only by extensions, but also by betterments of lines and service, while the admirable system of canals, which has proved such an important factor in the commercial and industrial development of the country is not only being maintained, but extended, and large expenditures are being made annually in the interest of river navigation.

OCEAN AND CHANNEL LINES.

Only the great lines of communication connecting French ports directly with the ports of other countries will be considered under this head, although several British lines, which do not touch at French ports, notably the great transatlantic lines from Southampton and Liverpool and the Peninsular and Oriental Navigation Company, transport vast quantities of merchandise and great numbers of passengers originating in or destined to France.

The principal ports of France, in the order of their importance, are Marseilles, Havre, Bordeaux, Dunkirk, Boulogne, Rouen, Calais, Dieppe, St. Nazaire, Cette, Bayonne, Nantes, and Nice. The three ports first named—Marseilles, Havre, and Bordeaux—are the chief centers of ocean commerce, the tonnage of the others mentioned being mostly devoted to channel, coastwise, and interior navigation.

1. MARSEILLES.

OCEAN LINES.—By far the most important French port is Marseilles, which is the gateway through which passes most of the vast ocean commerce between this country and the rest of the Eastern Hemisphere.

The movement of exterior navigation, as officially reported for all the French ports during 1894, represented an aggregate tonnage of 22,565,830, of which 6,592,841, or about 29 per cent of the whole, was registered from Marseilles. The appended statement, prepared by Mr. Claude M. Thomas, the consul of the United States at Marseilles, presents a complete exhibit of the operations of the many lines of maritime transportation which connect Marseilles directly with nearly all the seaports of the world.

The following companies sailing their vessels under the French flag operate from the port of Marseilles:

Messageries Maritimes.—The fleet of this company consists of forty-five ships, with tonnage and horsepower as follows:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Ernest Simons	5,500	6,000	Peiho	3,392	2,400
Océanien	4,259	3,400	Amazone	3,350	2,400
Yarra	4,255	3,400	Ava	3,361	2,400
Salazie	4,255	3,400	Iraouaddy	3,785	2,900
Sydney	4,232	3,400	Mpanjaka	684	450
Calédonien	4,232	3,400	Yang-tsé	3,791	2,900
Melbourne	4,080	3,400	Djennah	3,785	2,900
Natal	4,017	3,400	Niger	3,726	2,900
Saghalien	4,050	2,900	Gironde	3,280	2,900
Oxus	3,790	2,900	Senégal	3,716	2,900
La Seyne	2,853	2,000	Orlégal	3,056	1,900
Godavéry	1,480	1,600	Tigre	3,224	1,400
Eridan	1,852	1,400	Cambodge	2,599	1,400
Tibre	1,838	1,600	Sindh	3,373	2,000
Aréthuse	1,246	1,400	Médoc	3,655	1,900
Haiphong	1,548	1,400	Nerthe	3,718	2,900
Tamiae	2,333	1,400	La Bourdonnaise	2,045	1,600
Manche	2,315	1,400	Alphée	1,960	1,400
Armand-Béhic	6,548	7,000	Erymanthe	2,095	1,400
Polynésien	6,562	7,000	Guadalquivér	2,638	1,400
Australien	6,563	7,000	Guadiana	2,632	1,400
Ville de la Clotat	6,542	7,000	Deuro	2,745	1,400
Tanaïs	1,824	1,600			

In addition to these, the company has in process of construction two boats of very large capacity. It has at present, with its forty-five boats, a gross tonnage of 152,774, and a horsepower of 123,150.

The lines of the company from Marseilles are:

(1) For Yokohama, leaving Marseilles each alternate Sunday, and touching at Alexandria, Port Said, Suez, Aden, Colombo, Singapore, Saigon, Hongkong, Shanghai, and Kobe. A transfer is made at Colombo for Pondicherry, Madras, and Calcutta; at Singapore, for Batavia and Samarang, and at Saigon, for Tonquin ports.

(2) For Australia and New Caledonia, leaving Marseilles once monthly, always on the 1st or 3d, and touching at Port Said, Suez, Aden, Seychelles, King Georges Sound, Adelaide, Melbourne, Sydney, and Noumea. A transfer is made at Seychelles for Reunion and Mauritius.

(3) For the east coast of Africa, leaving monthly, always on the 12th, and touching at Port Said, Suez, Obock, Aden, Zanzibar, Mayotte, Nossi Be, Diego Suarez, Sainte Marie, Tamatave, Reunion, and Mauritius. A transfer is made at Aden for Bombay and Kurrachee; also at Nossi Be, for the west coast of Madagascar, touching at Majunga, Mainterano, and Morundava.

(4) For Syria, each alternate Saturday, touching first at Alexandria, Port Said, Jaffa, Beyrout, Tripoli, Lattaquie, Alexandretta, Mersina, Smyrna, Salonica, and Piraeus.

(5) For Syria, each alternate Saturday, touching first at Piraeus, Salonica, Smyrna, Larnica, Mersina, Alexandretta, Lattaquie, Tripoli, Beyrout, Jaffa, Port Said, and Alexandria.

(6) For Constantinople and the Black Sea, leaving Marseilles each alternate Saturday, and going by way of Piraeus, Smyrna, Dardanelles, Constantinople, Samsoun, Kerassunde, Trebizonde, and Batoum; returning via Trebizonde, Kerassunde, Samsoun, Constantinople, Dardanelles, Syra, and Calamata.

(7) For Odessa, each alternate Saturday, touching at Calamata, Syra, Dardanelles, Constantinople, Odessa, and returning by way of Constantinople, Dardanelles, Smyrna, and Piraeus.

(8) For London, via Havre, every Friday.

Compagnie Nationale de Navigation.—This company has eight boats, with one in process of construction, their names, tonnage, and horsepower being:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Canton.....	3,720	2,000	Chérifon.....	3,074	2,000
Colombo.....	3,733	2,000	Cachar.....	3,645	2,000
Comerin.....	3,747	2,000	Cachemire.....	3,859	2,000
Chandernago.....	3,074	2,000	Hindoustan.....	2,592	1,900

The company owns a tonnage of 26,944, and horsepower aggregating 15,900. Its lines from Marseilles are:

(1) For Haiphong (Tonquin), leaving and returning once monthly, and touching at Obock, Djiboute, Singapore, Saigon, and Touram (Annam).

(2) For New York, by way of Naples. This line is not at present in operation. The line is conducted in the interest of the Italian emigrant trade, and the ships are run only when there are demands of this nature.

Fraissinet et Cie.—This company has a fleet of twenty-four boats, with tonnage and horsepower as follows:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Tibet.....	3,500	800	Euxène.....	1,200	250
Liban.....	3,000	800	Junon.....	1,200	250
Amérique.....	3,000	700	Cyrnos.....	800	400
Stamboul.....	3,000	600	Ville de Bastia.....	800	400
Tabor.....	2,700	500	Bocognano.....	800	400
Taurus.....	2,500	400	Marie-Louise.....	700	120
Taygète.....	2,500	400	Saint-Marc.....	700	120
Pélon.....	2,500	400	Persévérant.....	500	200
Balkan.....	2,500	400	Blidah.....	400	120
Galatz.....	2,500	400	Durance.....	400	120
Braila.....	2,500	400	Médéah.....	300	120
Gyptia.....	1,200	250	Ande.....	200	100

The tonnage of the company is 39,400, with a horsepower of 8,700. Its lines from Marseilles are:

(1) Line for the Levant and the Danube. This line is called by the company Ligne A. The boats leave Marseilles each alternate Thursday, touching at Genoa, Syra, Smyrna, Dedeah, Rodasto, Constantinople, Soolina, Galatz-Braila, returning by way of Soolina, Constantinople, and Smyrna.

(2) Line for the Levant and the Danube, and called by the company Ligne B. The boats leave each alternate Thursday, between the sailings of Ligne A, and touch at Genoa, Piræus, Salonica, Dardanelles, Gallipoli, Constantinople, Soolina, Galatz-Braila. The boats return by way of Soolina, Constantinople, Dedeah, Salonica, and Piræus.

The winter service of these lines does not go beyond Constantinople, embracing the dates between November 15 and March 1.

(3) Line for Cette and Agde, leaving Marseilles every day at 7 p. m., returning direct.

(4) Line for Genoa, by way of Cannes and Nice, returning from Genoa direct to Marseilles every Wednesday.

(5) Line direct to Genoa, every Sunday and Thursday.

(6) Line for Nice, by way of Cannes, every Monday. Return direct to Marseilles.

(7) Line for La Nouvelle, direct, every Tuesday and Saturday.

(8) Line for Calvi and Ile Russe, direct, every Tuesday.

(9) Line for Leghorn, by way of Bastia (Corsica), every Sunday and Thursday.

(10) Line for Naples and return, direct, every Wednesday.

(11) Line for Bonifacio (Corsica), going by way of Toulon and Nice, each alternate Friday.

(12) Line for Corsican points (touching at Ajaccio, Propriano, then to Porto Tarres (Sardinia), and return, every Friday.

(13) Line for the west coast of Africa (the company's Ligne A). The boats leave Marseilles the 25th of February, and subsequently the 25th of each alternate month, touching at Oran, Las Palmas, Dakar, Conakry, Grand Bassam, Cotonow, and Loango; returning to Marseilles by way of Dakar and Las Palmas.

(14) The company's Line B, for the west coast of Africa: These are slower boats than on Line A, and carry no mails. The boats leave Marseilles each alternate month, not occupied by Line A, and touch at Las Palmas, Dakar, Conakry, Grand Bassam, Cotonow, and Libreville.

Compagnie Cyprien Fabre.—This company has fifteen boats, viz:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Gallia.....	1,800	500	Britannia.....	2,200	1,100
Lutetia.....	1,500	500	Albia.....	2,000	1,200
Foris.....	1,500	500	Alesia.....	2,700	1,300
Syria.....	1,500	600	Burgundia.....	2,700	1,300
Druentia.....	1,500	600	Neustria.....	2,300	1,500
Diolibah.....	2,200	850	Pictavia.....	2,000	850
Gergovia.....	2,500	900	Massilia.....	4,000	1,600
Maurice et Réunion.....	2,700	850			

The company thus owns a tonnage of 38,600, and 14,150 horsepower. Its lines from Marseilles are:

(1) For Oran, departing and returning once weekly.

(2) For Syria, touching at Alexandria, Jaffa, Acre, Beyrout, Alexandretta, and Mersina. On this line the boats depart every three weeks from March to August, and every two weeks from September to February.

(3) Line for La Plata and Rosario direct, departing once monthly.

(4) Line for New York, touching at Naples. Boats depart every two to three weeks, and are devoted to the transportation of merchandise from this port to New York, and vice versa, calling on the way out for emigrants at Naples.

Société Générale de Transports Maritimes à Vapeur.—This company owns a fleet of seventeen boats, viz:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Anjou.....	610	400	Aquitaine.....	2,756	2,400
Artois.....	845	800	Béarn.....	3,334	2,000
Auvergne.....	1,395	1,200	Bourgogne.....	1,698	1,200
Berry.....	1,491	1,400	Bretagne.....	1,614	1,200
Dauphiné.....	853	800	Espagne.....	3,448	2,800
Franche-Comté.....	845	800	La France.....	3,108	1,500
Languedoc.....	1,491	1,400	Italie.....	3,500	2,800
Lorraine.....	845	800	Provence.....	3,434	2,400
Touraine.....	946	800			

The company's total tonnage is 32,191, and horsepower 24,700. Its lines from Marseilles are:

(1) For Buenos Ayres, departing from Marseilles, twice monthly, touching at Barcelona, Gibraltar, Teneriffe, Dakar (sometimes at the Canaries and Senegal), Bahia, Rio Janeiro, Santos, Montevideo, and Buenos Ayres.

(2) For Algeria and Tunis, departing from Marseilles five times per week, and touching at Algiers, Arzew, Bone, Bougie, Djidjelli, Mastaganem, Oran, Philippeville, and Tunis.

(3) For Genoa, departing many times monthly, at irregular dates, depending upon the demands of traffic.

(4) A weekly service, departing from Cette for Algiers and Tunis.

Compagnie de Navigation Marocaine et Arménienne.—The company has eight boats, viz:

Name.	Tonnage.	Horsepower.	Name.	Tonnage.	Horsepower.
Anatolie	2,382	1,500	Meurthe	1,129	500
Arménie	2,119	1,400	Meuse	1,812	700
Circassie	2,454	1,700	Mingrôlie	2,837	1,500
La Gaule	1,597	800	Moselle	335	440

The total tonnage of the company is 14,613, and horsepower 8,540. Its lines from Marseilles are:

(1) Line for the Black Sea, departing from Marseilles twice monthly, on alternate Wednesdays, touching at Dardanelles, Constantinople, Samsoun, Kerassunde, Trebizonde, Batoum, and Novorossisk; returning by same points.

(2) Line for Morocco and the Canaries, departing from Marseilles the 7th and 23d of each month. The boats touch at Gibraltar, Tangier, Casablanca, Mazagan, Mogador, Teneriffe, Las Palmas, and return the same route.

Campagne Française de l'Afrique Occidentale.—The company has two boats, viz:

Name.	Tonnage.	Horsepower.	Name.	Tonnage.	Horsepower.
Foulah	1,500	560	Mandingue	1,400	560

The total tonnage is 2,900 and horsepower 1,140. The boats depart, and return, once each month for the west coast of Africa, touching at all points between St. Louis du Senegal and the English colony of Sierra Leone.

Compagnie Générale Transatlantique.—In the Mediterranean service this company has a fleet of twenty-six boats, viz:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Général Chanzy.....	2,330	3,800	Ville de Barcelone.....	1,905	2,000
Ville d'Alger.....	2,235	3,500	Ville d'Oran.....	1,936	2,000
Maréchal Bugeaud.....	2,235	3,500	Ville de Bone.....	1,938	2,000
Duc de Bragance.....	2,102	3,300	Ville de Naples.....	1,879	2,000
Eugène Perdre.....	2,078	3,300	Ville de Rome.....	1,870	2,000
Ville de St. Nazaire.....	2,066	2,600	Kléber.....	1,900	2,000
Ville de Brest.....	2,076	2,600	Afrique.....	1,227	1,100
Ville de Tunis.....	1,966	2,000	Ajaccio.....	1,228	1,100
Moïse.....	1,873	2,600	Bastia.....	1,227	1,100
St. Augustin.....	1,854	2,600	La Corsee.....	1,226	1,100
Isaac Perdre.....	1,855	2,000	La Cettori.....	1,233	1,100
Abd-el-Kader.....	1,859	2,000	Alice.....	972	400
Ville de Madrid.....	1,874	2,000	Venezuela.....	955	700

The company's tonnage from Marseilles is 47,099, with a horsepower of 54,400. Its lines from Marseilles are:

(1) Marseilles to Colon, once monthly, and touching at Barcelona, Malaga, Teneriffe, Trinidad, Carupano, La Guayra, Puerto Cabello, Curacao, Cartagena, Colon; returning by way of same ports.

(2) For Algiers, direct, departing from Marseilles every Monday, Wednesday, Thursday, and Saturday. On Wednesday, this line takes passengers for Dellys and Djidjelli.

(3) For Philippeville, by way of Ajaccio (Corsica), Bone, and Bougie.

(4) Line for Tunis, departing from Marseilles every Monday, Wednesday, and Friday, touching first at Tunis, Bizerte, Tabarka, La Calle, Bone, Philippeville, Calo, Djidjelli, Bougie, Dellys, Algiers, Port Neuches, Cette, St. Louis, Marseilles. A similar line runs thrice weekly, making these points in inverse order.

(5) For Bone, direct, every Saturday.

(6) For Oran, direct, every Saturday.

(7) For Philippeville, direct, every Wednesday and Friday.

(8) For Tripoli every Friday, touching at Tunis, Watta, Tripoli, Djerba, Gabes, Sfax, Mehdi, Monastir, and Sousse.

(9) For Gibraltar, every Tuesday, returning by way of Tangiers, Malaga, Melilla, Nemours, and Oran.

(10) For St. Nazaire, by way of Algiers, Oran, and Bordeaux, every Sunday.

Compagnie de Navigation Mixte.—The company has a fleet of eleven boats, viz:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Félix Touache.....	1,400	300	Emir.....	1,325	250
Rhône.....	1,400	300	Tell.....	1,270	225
Kabile.....	1,400	300	Soudan.....	883	150
Tafna.....	1,400	300	Alger.....	798	180
Oasis.....	1,392	250	Oran.....	790	120
Ialy.....	1,392	250			

The company's tonnage is 12,450; its horsepower 2,625. It conducts the following lines, starting from Marseilles:

- (1) For Algiers, direct, three sailings per week.
- (2) For Djidjelli, by way of Algiers and Bougie.
- (3) For Tunis, once per week.
- (4) For Philippeville, once per week.
- (5) For Bone, twice per week.
- (6) For Oran, once per week, direct.
- (7) For Mastaganem, by way of Cette, Oran, and Arzew, once weekly.
- (8) Marseilles to Cette, daily.
- (9) For the west coast of Africa, one sailing each six weeks, touching at Las Palmas, Dakar, Conakry, Sierra Leone, Grand Sahon, Half Jack, Grand Bassam, Grand Popo, Whydah, and Cotonow.

Compagnie Costaldi.—The company has five boats, viz:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Pytheas.....	400	230	Louis C.....	230	200
Michel C.....	300	248	Perigame.....	150	150
Marie.....	250	275			

The company has a tonnage of 1,330; horsepower, 1,103. Its lines from Marseilles are:

- (1) Twice weekly for Cette, by way of Agde.
- (2) Once weekly for La Nouvelle, by way of Cette and Port Vendres; once weekly for the same ports in the reverse order.
- (3) Once weekly for Mentone, by way of Cannes and Nice.
- (4) Once weekly for St. Trapes, by way of Cannes and Nice.
- (5) Once weekly for Nice, by way of Antibes.

Compagnie des Bateaux à Vapeur du Nord.—This company has in service from Marseilles nine boats, viz:

Name.	Tonnage.	Name.	Tonnage.
Ville d'Arras.....	832	Nantes-Bordeaux.....	880
President Leroy-Lallier.....	750	Ville de Marseille.....	756
Frédéric Movel.....	822	Cambrai.....	611
N. Verberckmoes.....	779	Ville de Lille.....	590
Ville de Dunkerque.....	783		

The company's tonnage is 6,803. It is not possible to secure the horsepower at the Marseilles office. Its lines from Marseilles are:

- (1) For Bordeaux and Dunkirk, departing five times monthly.
- (2) For La Rochelle, once monthly.

This company's boats do not take passengers from Marseilles.

Société Navale de l'Ouest.—This company has in the Mediterranean service seven boats, viz:

Name.	Tonnage.	Name.	Tonnage.
St. André.....	557	St. Mathieu.....	553
St. Jean.....	561	St. Paul.....	565
St. Luc.....	474	St. Pierre.....	571
St. Marc.....	553		

The tonnage is 3,854. The horsepower could not be secured at the Marseilles office.

The company conducts a weekly service from Marseilles to Antwerp, going by way of Lisbon, Nantes, Rouen, and Havre.

The foregoing twelve companies embrace all the French companies operating from the port of Marseilles, whose boats sail according to a prescribed schedule, or who actually own boats, the names and tonnage of which can be secured. Other companies, such as the Compagnie Toulon, Compagnie Avenir, and the Compagnie Lyonnaise de Navigation sur le Rhône, possess what are called transports, and small boats such as are known in America as tugs; but the names of these and the tonnage, which is of course immaterial, can not be secured. It will be observed that the above twelve companies possess 177 vessels, with a combined tonnage of 378,958 and a horsepower of 254,408. The aggregate of horsepower does not include that of the sixteen boats of the two last-named companies. If obtainable, this would probably add a horsepower of about 6,000 to the above figures, bringing the combined horsepower to 260,000, approximately.

FOREIGN OCEAN LINES.—In addition to these, many foreign companies touch regularly at Marseilles, chief of which are:

(1) *The Anchor Line*, touching at Marseilles twice monthly, proceeding from India for Liverpool and Glasgow.

(2) *The Johnston Line*, with a regular service from Marseilles to Constantinople and the Black Sea.

(3) *The Bibby Line*, from English ports for Colombo and Rangoon, and vice versa.

(4) *The United Steamship Company*, monthly, for Copenhagen and the Baltic.

(5) *The Hall Line*, twice monthly from India for Liverpool.

(6) *The Peninsular and Oriental*, weekly from London for all points in the far East; weekly return from the East for London.

(7) *The Robert M. Sloman, jr., Company*, regular service from Marseilles to Hamburg.

(8) *Svenska Lloyd Company*, regular service, Marseilles, Copenhagen and Stockholm.

(9) *Ybarra & Co.*, regular and very frequent service, Marseilles to Bilbao and all Spanish ports.

(10) *Compagnie Transatlantique de Barcelone (Lopez et Cie.)*, regular service Marseilles and all Spanish ports and Buenos Ayres.

(11) *The Rotterdam Lloyd Company*, departure and return every two weeks between Marseilles and the Netherlands.

(12) *The Adria Line*, twice weekly between Marseilles, Fiume, and Trieste.

(13) *La Compagnie Sévillane*, once weekly Marseilles to Seville and all intermediate Spanish ports.

(14) *The Persian Gulf Steamship Company*, regular service from London to Bagdad, touching at Marseilles each way.

(15) *Compagnie Italienne de Navigation*, regular service Marseilles to Trieste, and vice versa.

(16) *Compagnie Russe de Navigation*, irregular service Marseilles and Black Sea and Danube ports.

(17) *Compagnie Fluviale*, Marseilles and Spanish ports.

(18) *Compagnie Panhellénique*, regular service Marseilles to Greece and Asia Minor.

(19) *Compagnie Valencia*, Marseilles to Valencia and Spanish ports.

(20) *Navigazione Generale Italiana*, every week, Marseilles to Italian and eastern Mediterranean ports; once monthly for Bombay.

In the matter of so-called "tramp" steamers and sailing vessels, anything in the nature of accurate data would occupy a great deal of space, and the facts secured would be of small value. These ships arrive every day at the port of Marseilles, coming and going in any direction demanded by trade.

NAVIGATION AT MARSEILLES.—The following table has been prepared for the year 1893, indicating the number of vessels (both entries and departures), steamers and sailing craft, to and from the port of Marseilles, with the tonnage of the vessels and the actual cargo carried. It is regretted that the figures for 1894 are not yet obtainable:

Month.	Number.	Tonnage.	Actual cargo.	Month.	Number.	Tonnage.	Actual cargo.
			<i>Tons.</i>				<i>Tons.</i>
January	1, 103	715, 484	323, 233	August	1, 481	742, 691	386, 853
February	1, 130	697, 600	317, 185	September	1, 294	738, 621	366, 361
March	1, 372	796, 770	405, 426	October	1, 414	839, 609	421, 142
April	1, 392	829, 528	437, 176	November	1, 215	787, 501	465, 305
May	1, 441	884, 212	431, 309	December	1, 410	832, 388	481, 544
June	1, 313	833, 020	479, 459				
July	1, 420	757, 116	423, 686	Total	15, 985	9, 454, 549	4, 920, 679

PASSENGER RATES FROM MARSEILLES.—The following table will indicate the cost of passage from Marseilles to the points named :

Name of city.	First class.	Second class.	Third class.	Name of city.	First class.	Second class.	Third class.
Yokohama.....	\$331.00	\$222.00	\$122.00	Rodosto.....	\$48.00	\$33.00	\$11.00
Kobe.....	331.00	222.00	122.00	Soolina.....	67.00	50.00	16.00
Shanghai.....	331.00	222.00	122.00	Genoa.....	5.79	3.86	1.50
Hongkong.....	331.00	222.00	122.00	Agde.....	2.30	1.50	1.15
Saigon.....	299.00	198.00	109.00	Ajaccio.....	5.79	3.86	1.93
Haiphong.....	331.00	221.00	122.00	Bastia.....	5.79	3.86	1.93
Samarang.....	299.00	198.00	109.00	Bonifacio.....	8.72	5.40	3.08
Batavia.....	299.00	198.00	109.00	Calvi.....	5.79	3.86	1.93
Singapore.....	270.00	179.00	98.00	Ile Russe.....	5.79	3.86	1.93
Calcutta.....	241.00	160.00	88.00	Propriano.....	6.94	4.32	2.70
Madras.....	241.00	160.00	88.00	Porto Torres.....	10.80	8.68	4.82
Pondicherry.....	236.00	157.00	86.00	Toulon.....	1.54	1.15	.57
Colombo.....	231.00	154.00	84.00	Nice.....	5.79	3.86	1.54
Noumea.....	361.00	221.00	110.00	Cannes.....	2.89	1.93	1.15
Sydney.....	313.00	193.00	98.00	Naples.....	17.37	13.51	3.08
Melbourne.....	313.00	193.00	98.00	Leghorn.....	9.65	6.75	2.89
Adelaide.....	313.00	193.00	98.00	Cette.....	1.93	1.54	.96
King George.....	313.00	193.00	98.00	La Nouvelle.....	2.89	1.93	1.54
Mauritius.....	241.00	183.00	91.00	Barcelona.....	9.65	3.86	.....
Reunion.....	241.00	183.00	91.00	Malaga.....	28.95	10.80	.....
Tamatave.....	236.00	176.00	88.00	Teneriffe.....	48.00	33.00	19.30
St. Marie.....	236.00	173.00	86.00	Algiers.....	19.30	13.51	5.79
Diego Suarez.....	231.00	168.00	84.00	Bone.....	19.30	13.51	5.79
Bombay.....	241.00	160.00	88.00	Arzew.....	21.23	14.47	6.75
Kurrachee.....	226.00	150.00	82.00	Bongia.....	19.30	13.51	7.14
Nossi Be.....	227.00	165.00	82.00	Collo.....	19.30	13.51	7.14
Mayotte.....	220.00	160.00	80.00	Delys.....	19.30	13.51	6.36
Zanzibar.....	212.00	154.00	77.00	Djidjelli.....	19.30	13.51	7.14
Aden.....	168.00	111.00	61.00	Gibraltar.....	30.88	23.18	12.54
Obock.....	164.00	109.00	59.00	La Calle.....	19.30	13.51	8.72
Suez.....	86.00	65.00	32.00	Melilla.....	26.05	20.26	9.65
Port Said.....	77.00	57.00	28.00	Mostaganem.....	21.23	14.47	6.94
Alexandria.....	57.00	40.00	17.00	Nemours.....	22.19	15.44	8.10
Alexandretta.....	84.00	57.00	21.00	Oran.....	19.30	13.51	5.79
Batoum.....	62.00	.....	.....	Philippeville.....	19.30	13.51	5.79
Beyrout.....	77.00	54.00	21.00	Tangiers.....	32.81	25.09	13.51
Calamata.....	34.00	.....	.....	Tunis.....	24.12	18.33	9.65
Constantinople.....	43.00	28.00	9.00	Malta.....	36.67	26.05	15.04
Dardanelles.....	42.00	28.00	9.00	Bizerte.....	27.98	21.23	11.96
Jaffa.....	71.00	50.00	20.00	Djerba.....	38.60	27.98	16.40
Larnaca.....	77.00	52.00	20.00	Gabes.....	36.67	27.40	15.05
Latakca.....	84.00	60.00	23.00	Mehdia.....	31.84	23.18	12.73
Mersina.....	81.00	54.00	21.00	Monastir.....	29.91	22.58	12.54
Piree.....	36.00	23.00	7.00	Sfax.....	35.70	27.02	14.47
Salonica.....	48.00	32.00	13.00	Sousse.....	28.95	22.19	12.54
Smvrna.....	38.00	28.00	9.00	Cartagena.....	21.80	15.82	8.67
Syra.....	36.00	.....	.....	Las Palmas.....	57.90	48.25	19.30
Tripoli.....	82.00	57.00	22.00	Dakar.....	132.20	110.01	46.32
Kerasunde.....	57.00	.....	.....	Conakry.....	144.75	121.50	48.25
Odeasa.....	57.00	.....	.....	Sierra Leone.....	149.57	125.45	52.11
Trebizoude.....	59.00	38.00	14.00	Grand Bassam.....	173.70	135.10	63.69
Samsoun.....	53.00	36.00	13.00	Elmina.....	173.70	135.10	63.69
Novorussiak.....	67.00	44.00	17.00	Accra.....	173.70	135.10	63.69
Braila.....	72.00	52.00	16.00	Catonon.....	193.00	164.05	67.55
Dedeah.....	48.00	32.00	11.00	Libreville.....	212.30	173.70	73.34
Galatz.....	72.00	52.00	16.00	Loango.....	231.60	189.14	79.13
Gallipolis.....	48.00	33.00	11.00	.....	.....	.....	.....

Except to the last-named points, on the west coast of Africa, passenger traffic from Marseilles to the Atlantic is so inconsiderable that it is not deemed necessary to give passenger rates for other points. The passage for emigrants for New York charged by the Marseilles companies from Marseilles and Naples is from \$19.30 to \$27.98.

It must be remembered that the above table of passenger rates is compiled from the offices of the companies furnishing the most desirable accommodations, and the figures given are for the best obtainable service for the respective classes. Other companies reaching the various points above enumerated charge a much lower price; in some instances, notably Algiers, the difference is as great as 50 per cent.

OCEAN FREIGHT RATES.—In the matter of freight rates, it is virtually impossible to present figures of value. Each company has practically the same rate as others for any particular point, but there is a different rate for almost every article of merchandise. Some goods are handled by the kilo or the 100 kilos; others, entirely by the ton. Then, too, under the French system, while in weight 1,000 kilos is a ton, certain classes of goods are only accepted by cubic measurement—50 cubic feet of space being estimated as 1 ton. Light merchandise, such as almonds, occupying a ton of space, really weigh only about 600 kilos (1,323 pounds). In a general way, it may be stated that the cost of shipment from Marseilles to Constantinople and the neighboring Mediterranean and Black Sea ports varies from 20 to 35 francs (\$3.96 to \$6.75) per ton, depending, of course, on the character of the merchandise.

For China, Japan, and the far East, the cost of freight for general merchandise varies from 35 to 45 francs (\$6.75 to \$8.68) per ton; for such goods as cement, lime, etc., from 20 to 25 francs (\$3.96 to \$4.82) per ton; for heavy goods, such as structural iron, from 25 to 30 francs (\$4.82 to \$5.79) per ton.

For the west coast of Africa, the rates vary from 20 to 30 francs (\$3.96 to \$5.79); for Bordeaux and the west coast of France, from 15 to 18 francs (\$2.90 to \$3.47) per ton.

2. HAVRE.

OCEAN LINES.—Next to Marseilles, the great ocean port of France is Havre, which is the chief point of arrival and departure for all the direct traffic between France and the United States. The arrivals and departures during 1894 represented an aggregate tonnage of 3,742,410, or nearly 17 per cent of the total of France.

The following companies operate regularly from the port of Havre:

Compagnie Générale Transatlantique.—The Atlantic and coastwise fleets of the company running from Havre and St. Nazaire consist respectively of twenty-five and thirteen vessels, with the following tonnage and horsepower:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Atlantic line:			Atlantic line—continued.		
La Touraine.....	9,132	12,000	Colombie.....	2,876	1,800
La Champagne.....	7,277	9,000	Ville de Bordeaux.....	2,670	2,600
La Bretagne.....	7,302	9,000	Intercolonial service:		
La Bourgogne.....	7,630	9,000	Ville de Tanger.....	1,066	700
La Gascogne.....	7,630	9,000	Salvador.....	1,011	700
La Navarre.....	6,959	7,000	St. Dominique.....	1,011	700
La Normandie.....	6,485	6,500	Coastwise service.		
Amerique.....	4,525	3,300	Alexandre Bixio.....	2,253	1,100
France.....	4,550	3,300	Flachat.....	2,253	1,100
Labrador.....	6,970	3,300	Fournel.....	2,187	1,300
Canada.....	4,287	3,300	La Gard.....	1,775	1,500
St. Laurent.....	4,132	3,300	Le Tarn.....	1,775	1,500
Versailles.....	4,336	4,200	Le Calvados.....	1,775	1,500
St. Germain.....	3,641	3,100	Désirade.....	1,452	1,200
Lafayette.....	3,394	3,800	Malvina.....	1,245	950
Washington.....	3,401	1,700	Le Morbihan.....	1,182	700
Olinda Rodrigues.....	3,188	1,700	Manoabia.....	1,080	900
St. Simon.....	3,137	1,700	Colomba.....	836	550
Ferdinand de Lesseps.....	2,220	1,800	Dragut.....	556	550
Ville de Marseille.....	2,536	1,800	Mustapha ben Ismail.....	556	500

This company operates lines from Havre as follows:

- (1) For New York. Departures and arrivals every Saturday.
- (2) For the island of Hayti, via St. Nazaire and Bordeaux, touching at St. Thomas, St. Juan de Porto Rico, Puerto Plata, Cape Haytien, Port au Prince, St. Marc, Gonaives; direct connections for Ponce, Mayaguez, Santo Domingo, Jacmel, Petit Goave, Jeremie, and Aux Cayes. Arrivals and departures monthly.
- (3) For Colon, via Bordeaux, touching at Santander, Guadeloupe, Martinique, Trinidad (Bolivar), Carupano, La Guayra, Puerto Cabello, and Sabanilla. Arrivals and departures monthly.

Compagnie des Chargeurs Réunis.—This company, organized in 1872, possesses a fleet of thirty-four steamers of the first class (of which two are under construction) with an aggregate tonnage of 90,159 and a collective horsepower of 42,000. The following are the names of these vessels, with the tonnage and horsepower of each:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Paraguay	3,562.55	1,900	Paranagua	2,184.33	1,250
Rio Negro.....	3,382.51	1,550	Ville de Ceara.....	2,308.31	1,290
Uruguay.....	3,399.17	1,550	Villa de Pernambuco.....	2,169.75	1,000
Pampa.....	3,021.47	1,300	Villa de Rosario.....	2,119.02	1,000
Dom Pedro.....	3,014.98	1,300	Villa de San Nicolas.....	2,119.02	1,000
Portefa.....	2,355.05	1,200	Villa de Montevideo.....	2,119.03	1,000
Canarias.....	3,354.47	1,450	Villa de Buenos Aires.....	2,119.02	1,000
Caravellas.....	3,354.47	1,450	Villa de Maranhão.....	2,543.77	1,200
Concordia.....	3,076.44	1,450	Villa de Maceio.....	2,543.77	1,200
Colonia.....	3,076.44	1,450	Sergent Malamine (annex).....	101.57	130
Campana.....	3,076.44	1,450	Eclairer (annex).....	101.90	80
Corrientes.....	3,076.44	1,450	Mosca (tug).....	81.15	160
Corisca.....	3,076.44	1,450	New steamers:		
Colombia.....	3,076.44	1,450	Carolina.....	3,616.33	1,500
Cordoba.....	2,833.90	1,400	California.....	3,616.33	1,500
Entre Rios.....	2,893.64	1,400	Under construction:		
Santa Fé.....	2,893.64	1,400	Cordilleras.....	3,354.47	1,450
Parahyba.....	2,682.70	1,400	Campinas.....	3,354.47	1,450

This company operates four distinct lines from Havre, viz:

- (1) For New Orleans, via Antwerp and Bordeaux. Arrivals and departures monthly.
- (2) For the west coast of Africa (subventioned postal service), Teneriffe, Dakar, Conakry, Sierra Leone, Grand Bassam, Cotenou, and the French Congo. Arrivals and departures bimonthly.
- (3) For Brazil, direct, via Lisbon to Pernambuco, Maceio, Bahia, Rio de Janeiro, Santos, with connections at Rio de Janeiro for Paranagua, St. Catherine, Rio Grande do Sul, Victoria, Pelotas, and Porto Alegre. Arrivals and departures four times per month—twice in the Havre, Lisbon, Rio de Janeiro and Santos service, and twice in the Rio de Janeiro service via Pernambuco, Maceio, and Bahia.
- (4) For the River Plate, leaving Havre the 10th, 20th, and 30th of each month, via Bordeaux (boats of the 10th and 20th only) and Teneriffe, to Montevideo and Buenos Ayres.

Compagnie Havraise Péninsulaire de Navigation à Vapeur.—Regular line of steamers for Majunga, Diego Suarez, and Tamatave (Madagascar), Port Louis (Mauritius), and La Reunion.

Service Maritime de la Maison Worms, Josse & Co.—This company, engaged in the coastwise service, has a fleet of thirteen vessels, with an aggregate tonnage of 19,200, as follows:

Name.	Tonnage.	Name.	Tonnage.
Suzanne et Marie.....	2,000	Commandant Franchetti.....	1,200
Sephora Worms.....	2,000	Marguerite Franchetti.....	1,200
Emma.....	2,000	Blanche.....	1,200
Thérèse et Marie.....	2,000	Marie.....	1,200
Lucie et Marie.....	2,000	Ville de Nantes.....	1,000
Hippolyte Worms.....	1,500	Président.....	700
Frédéric Franck.....	1,200		

This company operates the following services from Havre:

(1) For Bordeaux and intermediate points. Depart every Tuesday and Friday.

(2) For Hamburg. Departs every Friday.

(3) For Brest, Tonnay, Rochefort, and La Rochelle and Pallice. Departures and arrivals alternate Saturdays.

Jens, Meinich & Co.—This firm operates a regular line of steamers between Rouen and Havre and Christiania (Norway).

Havre-Bilbao lines.—Regular service between Havre and Bilbao for all points in Spain.

Chevillotte Frères.—Regular lines between Havre, Brest, and Nantes. Arrivals and departures every alternate day.

Compañía Transatlántica.—Regular service between Havre and Havana and Vera Cruz.

In addition to the foregoing, the vessels of the Hamburg South American Steamship Company touch monthly at Havre en route to Paranagua, Desterro, Rio Grande do Sul, and all points in southern Brazil.

There is a daily service with Southampton, making close connections with steamers of the American and North German Lloyd lines for New York, and with other lines from that port.

There is a direct service to Liverpool in connection with the Cunard, White Star, and other steamers sailing from that port for New York, Boston, and other ports in the New and Old World.

PASSENGER RATES FROM HAVRE.—The following shows the rates of passage now current from Havre to the points named:

Havre to—	First class.	Second class.	Third class.	Havre to—	First class.	Second class.	Third class.
Liverpool.....	\$8.22	.....	\$5.16	Havana.....	\$164.05 to 183.34	\$135.10	\$86.60
Hamburg.....	11.58	.....	5.79	Vera Cruz.....	193.00 to 212.30	164.05	86.60
New Orleans.....	.....	.....	36.32	Tamatave.....	259.58	192.22	99.00
Christiania.....	22.00	.....	.....	Port Louis.....	393.72	285.83	164.63
Southampton.....	5.56	\$4.20	2.57	Montevideo.....	144.75	67.55	28.95
London.....	6.64	4.83	3.63	Buenos Ayres.....	144.75	67.55	28.95
Antwerp.....	.....	.....	6.37	Pernambuco.....	.....	.....	28.95
St. Thomas.....	178.70 to 193.00	154.40	86.60	Rio de Janeiro.....	.....	.....	28.95
Santo Domingo.....	183.34 to 212.30	154.40	86.60	Dakar.....	144.75	119.66	57.90
Port au Prince.....	183.34 to 212.30	154.40	86.60	Lisbon.....	23.16	.....	.....
Colon.....	183.34 to 212.30	154.40	86.60	Bilbao.....	11.58	8.66	5.79

Havre to New York.—Compagnie Générale Transatlantique: Summer rates, first class \$96.59 to \$193, second class \$57.90; winter rates, first class \$77.20 to \$154.40, second class \$57.90, third class \$13.37. Hamburg-American Line: Summer rates, first class \$60.22 to \$72.68, second class \$57.90, third class (French, Italian, Swiss, and Spanish emigrants)—adults \$17.37, children 1 to 12 years \$8.69, infants \$2.18; emigrants of other nationalities—adults \$29.95, children \$14.98, infants \$2.18; winter rates, first class \$54.28 to \$60.22, second class \$57.90, steerage, same as summer rates. American Line: First class, \$100 to \$172; second class, \$42.40; third class, \$19.90.

Round-trip tickets, good for from ten days to a year according to the distance, are sold at an average discount of from 20 to 33½ per cent from the rates quoted.

OCEAN FREIGHTS.—It is not possible to state with any exactness the rates for ocean freights, because they are constantly fluctuating and vary according to the classification of the merchandise, the country to or from which it is transported, the kind of vessel by which it is shipped, the ebb and flow of the demand for tonnage on given lines, etc.

3. BORDEAUX.

OCEAN LINES.—The third French port in point of importance is Bordeaux. The arrivals and departures during 1894 numbered 2,733, representing an aggregate tonnage of 1,789,827. The following are the principal companies operating lines from Bordeaux:

Compagnie des Messageries Maritimes.—The Atlantic fleet of this company, running from Bordeaux, is composed of thirteen vessels whose names, tonnage, and horsepower are:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Brézil	5,809	5,400	Dordogne	3,750	2,200
La Plata	5,676	5,400	Adour	3,730	2,200
Portugal	5,430	4,800	Matapan	3,657	1,900
Equateur	3,856	2,900	Corduan	3,641	1,900
Orénoque	3,832	2,900	Chili	3,234	6,000
Congo	3,831	2,900	Under construction	3,234	6,000
Charente	3,774	2,200			

The services of this company from Bordeaux are:

(1) For Lisbon, Dakar, Rio de Janeiro, Montevideo, Buenos Ayres. Departures the 5th of every month.

(2) For Vigo, Lisbon, Dakar, Pernambuco, Bahia, Rio de Janeiro, Montevideo, and Buenos Ayres. Departures the 20th of each month.

(3) For Pasoges, La Corogne, Vigo, Porte Leixoes, Lisbon, Pernambuco, Bahia, Rio de Janeiro, Santos, Montevideo, Buenos Ayres (commercial service of cargo boats, with stoppages as desired by shippers). Departures the 28th of each month.

Chargeurs Réunis.—The services of this line from Bordeaux (Panillac) are:

(1) For New Orleans. Departures the 30th of each month.

(2) For all points on the west coast of Africa, as stated under the head of Havre. Departures from Bordeaux the 10th of each month.

(3) For Teneriffe, Montevideo, and Buenos Ayres. Departures semi-monthly.

Nouvelle Compagnie Bordelaise de Navigation.—The fleet of this company is composed as follows:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Château-Lafitte	3,462	2,000	Thomas Anderson.....	2,583	1,000
Panama.....	2,118	1,000	Ardoncorraet.....	1,432	700
Wallachia.....	1,724	850	Gladiolus.....	1,941	1,000

The services are:

(1) Regular service between Bordeaux and New York by the *Château-Lafitte* and the *Panama* (only the former carrying passengers). Departures from Bordeaux monthly or oftener.

(2) Freight service between Bordeaux, New York, and Baltimore.

Compagnie Havraise Péninsulaire de Navigation à Vapeur.—This line runs from Havre, via Bordeaux and Marseilles, to Madagascar ports, Mauritius, and La Reunion. Departures from Bordeaux monthly.

General Steam Navigation Company.—This company performs a regular weekly service between Bordeaux and London, with the steamers *L'Hirondelle* and *Le Pérégrin*, of 800 tons each, and of 400 and 600 horsepower respectively. Departures every Friday; arrivals every Monday.

La Société Générale des Transports Maritimes à Vapeur de Marseille.—A bimonthly service is performed between Bordeaux and Algiers with the steamers *Berry* (864 tons, 1,400 horsepower), and *Jeanne d'Arc* (749 tons, 700 horsepower).

Bordeaux-Liverpool Company.—This company performs a weekly service between Bordeaux and Liverpool, with the steamers *La Gascogne* and *Guienne* (1,150 tons and 600 horsepower each). Departures from Bordeaux every Thursday.

Compagnie des Bateaux à Vapeur du Nord.—This company performs a regular coastwise service between Bordeaux, Dunkirk, La Pallice, St. Nazaire, Marseilles, and Cette. Departures from Bordeaux every six days.

Compagnie Royale Néerlandaise de Navigation à Vapeur.—The steamers of this company sail from Bordeaux for Amsterdam and intermediate ports every alternate Tuesday.

PASSENGER RATES.—The following shows the current passenger rates from Bordeaux to leading ports in different parts of the world:

Passenger rates on the Atlantic Ocean Line (Compagnie des Messageries Maritimes)

OUTWARD VOYAGE.

[In francs, 1=19.3 cents.]

To—	From—								
	Bor-deaux.	La Co-rogne.	Vigo.	Lisbon.	Dakar.	Per-nam-buco.	Bahia.	Rio Janeiro.	Monte-vidéo.
La Corogne:									
First class.....	150								
Second class.....	100								
Third class.....	50								
Vigo:									
First class.....	150								
Second class.....	100								
Third class.....	50								
Lisbon:									
First class.....	155	100	100						
Second class.....	105	75	75						
Third class.....	55	25	25						
Dakar:									
First class.....	700	650	650	540					
Second class.....	500	450	450	405					
Third class.....	250	250	250	225					
Pernambuco:									
First class.....	750	700	700	550	490				
Second class.....	550	500	500	415	400				
Third class.....	250	250	250	250	250				
Bahia:									
First class.....	800	750	750	600	515	125			
Second class.....	550	500	500	450	425	100			
Third class.....	250	250	250	250	250	45			
Rio Janeiro:									
First class.....	850	800	800	750	610	250	200		
Second class.....	600	550	550	500	445	188	150		
Third class.....	250	250	250	250	250	70	50		
Montevideo:									
First class.....	1,000	980	980	900	890	560	520	200	
Second class.....	700	685	685	650	650	420	345	160	
Third class.....	250	250	250	250	250	165	140	80	
Buenos Ayres:									
First class.....	1,000	980	980	900	890	600	550	280	42
Second class.....	700	685	685	650	650	450	375	180	33
Third class.....	250	250	250	250	250	175	150	80	21

Single passengers having the exclusive use of a double-berth stateroom, first class, are required to pay 70 per cent in addition to the price of such stateroom.

HOMEWARD VOYAGE.

To—	From—								
	Buenos Ayres.	Monte-vidéo.	Rio Janeiro.	Bahia.	Per-nam-buco.	Dakar.	Lisbon.	Vigo.	La Co-rogne.
Montevideo:									
First class.....	42								
Second class.....	33								
Third class.....	21								
Rio Janeiro:									
First class.....	280	260							
Second class.....	180	160							
Third class.....	80	80							
Bahia:									
First class.....	550	520	200						
Second class.....	375	345	150						
Third class.....	150	140	50						
Pernambuco:									
First class.....	600	560	250	125					
Second class.....	450	420	188	100					
Third class.....	175	165	70	45					

Passenger rates on the Atlantic Ocean Line, etc.—Continued.

HOMEWARD VOYAGE—Continued.

[In francs, 1 = 19.3 cents.]

To—	From—								
	Buenos Ayres.	Montevideo.	Rio Janeiro.	Bahia.	Pernambuco.	Dakar.	Lisbon.	Vigo.	La Corogne.
Dakar:									
First class.....	890	890	610	515	490				
Second class.....	650	650	445	425	400				
Third class.....	250	250	250	250	250				
Lisbon:									
First class.....	900	900	750	600	550	540			
Second class.....	650	650	500	450	415	405			
Third class.....	250	250	250	250	250	225			
Vigo:									
First class.....	980	980	800	750	700	650	100		
Second class.....	685	685	550	500	500	450	75		
Third class.....	250	250	250	250	250	250	25		
La Corogne:									
First class.....	980	980	800	750	700	650	100		
Second class.....	685	685	550	500	500	450	75		
Third class.....	250	250	250	250	250	250	25		
Bordeaux:									
First class.....	1,005	1,005	905	805	755	705	160	155	155
Second class.....	705	705	605	555	555	505	110	105	105
Third class.....	255	255	255	255	255	255	60	55	55

Single passengers having the exclusive use of a double-berth stateroom, first class, are required to pay 70 per cent in addition to the price of such stateroom.

In the ports of La Plata the passage money is paid in piastres at the rate of exchange fixed by the agency of the company.

The rates of the Compagnie des Messageries Maritimes from Bordeaux to other ports than the foregoing are: To New York, \$60, first class; \$30, second. To New Orleans, \$30, third class (no first or second class, and line now discontinued). To London, \$12.50, first class (meals, \$5 extra); second class, \$12; third class, \$8 (meals included in both). To Liverpool, first class, \$20; second class, \$15; third class, \$10. To Amsterdam, first class, \$15 (no second or third class).

Steamers to Tamatave, Mauritius, and Reunion carry only freight.

The company issues round-trip tickets, good for one year, from Bordeaux for the following Atlantic Ocean ports:

Port.	First class.	Second class.	Port.	First class.	Second class.
Dakar.....	\$203.62	\$155.37	Rio Janeiro.....	\$247.34	\$186.25
Pernambuco.....	218.09	170.81	Montevideo.....	290.47	216.12
Bahia.....	232.57	170.81	Buenos Ayres.....	290.47	216.12

FREIGHT RATES.—The current quotations for freight to New Orleans and other points in the South and West, as made by the Compagnie des Chargeurs Réunis, are:

From Bordeaux and Havre to New Orleans, per cubic meter or 700 kilograms (35.317 cubic feet or 1,543 pounds), for all merchandise (at the choice of the ship), without primage, \$3.96.

From Bordeaux to New Orleans, per wine cask of Bordeaux, wine in casks, \$9 and 10 per cent.

Wine in cases, spirits, liquors (240 bottles to the cask), and preserves, \$7 and 10 per cent.

Glassware in crates, faience, and mineral water, \$5.50 and 10 per cent.

Merchandise for New Orleans, in transit, is accepted at Bordeaux at the uniform rate of \$6 per cask per ton. (Bill of lading direct for New Orleans, transshipment being made by the consignees.)

The following are the rates for shipments direct from Havre, Antwerp, and Bordeaux for the following points (via New Orleans), and per cask of 40 cubic feet or 1,000 kilograms (2,204 pounds), at the choice of the ship, without primage:

Ports.	First class.	Second class.	Third class.
To San Francisco, Portland, Oreg., and Los Angeles	\$23. 16	\$21. 23	\$19. 30
To San Francisco, Portland, Oreg., and Los Angeles, from Havre and Bordeaux only:			
Per cubic meter or 700 kilograms	15. 44	15. 44	15. 44
Wine in casks, per 4 Bordeaux casks	21. 23	21. 23	21. 23
Champagne, per cask of 240 bottles	19. 30	19. 30	19. 30
To Corpus Christi, Brazos, and Brownsville, for merchandise not above 600 kilograms, per cubic meter	24. 13	24. 13	24. 13
To Eagle Pass, El Paso, and Laredo, freight for New Orleans, per cubic meter or 700 kilograms (1,543 pounds), plus \$1.32 per £100 (\$286.60) for all merchandise.....	11. 58	11. 58	11. 58
To Galveston			

For New Orleans: Specie and other money values, one-half of 1 per cent; minimum freight, 20 francs (\$3.86). For other destinations: Minimum freight, 50 francs (\$9.65). Champagne wine is rated per cask of 240 bottles.

The Nouvelle Compagnie Bordelaise de Navigation makes average rates on general merchandise from Bordeaux to New York of 20 francs (\$3.86) per ton, and from New York to Bordeaux of 30 francs (\$5.79) per ton. The rates vary, however, according to the season and the quantity and nature of the merchandise. For general merchandise, current rates between Bordeaux and London are 12 shillings (\$2.93) and 10 per cent, and between Bordeaux and Liverpool 15 shillings (\$3.64) and 10 per cent.

The Compagnie des Chargeurs Réunis makes the following quotations on merchandise to South America, which are subject to frequent changes:

To—	General merchandise per cubic meter or 500 kilograms (1,102 lbs.).		Merchandise from Bordeaux per ton.		Potatoes per 900 kilograms (1,984 lbs.).		Wine in casks (cask of Bordeaux).		Spirits in casks (cask of Bordeaux).	
	Rate.	Per cent.	Rate.	Per cent.	Rate.	Per cent.	Rate.	Per cent.	Rate.	Per cent.
Pernambuco, Maceio, and Bahia.....	\$10. 23	10	\$13. 51	10	\$13. 51	10	\$16. 40	10	\$18. 33	10
Rio de Janeiro.....	8. 69	10	12. 55	10	12. 55	10	15. 44	10	17. 37	10
Santos.....	11. 58	10	13. 51	10	13. 51	10	16. 40	10	18. 33	10
Montevideo and Buenos Ayres....	6. 75	10	6. 75	Dry.	7. 72	10	8. 69	Dry.	10. 62	Dry.
Rosario.....	8. 69	10	8. 69	Dry.	9. 65	10	10. 62	Dry.	13. 51	Dry.

Port charges are additional. Discounts of from 5 to 10 francs (\$0.965 to \$1.93) per ton are allowed on large shipments for La Plata.

The same company quotes freights to the west coast of Africa at 25 to 55 francs (\$4.93 to \$10.62) per ton, according to the classification and quantity of merchandise and the destination.

Bordeaux to Algiers, general merchandise 20 to 25 francs (\$3.96 to \$4.93) per ton.

4. DUNKIRK.

OCEAN LINES.—The fourth port of France in importance is Dunkirk. The following very complete exhibit, prepared by Mr. Benjamin Morel, United States consular agent at Dunkirk, shows the names of all the companies serving that port; names, tonnage, and horsepower of their vessels; services, passenger and freight rates, and dates of sailing:

Regular lines of steamers running from and to Dunkirk.

Companies and steamers.	Nettonnage.	Horsepower.	Dunkirk to—	Freight per ton.	Fare.	Sailings.
Compagnie Générale des Vapeurs du Nord:						
Neva	171	60	Havre	\$0.96½	\$1.93 to 3.86	Wednesdays.
Jean Bart	395	80	Bayonne via Rouen.	1.93	3.86 to 9.65	Fortnightly.
Marie	461	100	Boulogne	1.93	3.86 to 9.65	Weekly.
Ville de Boulogne.	473	120	L'Orient, La Pallice.	1.93	3.86 to 9.65	Do.
Nord	547	90	La Rochelle and Bordeaux.	1.93	3.86 to 9.65	Do.
Ville de Lisle..	590	90	Bordeaux, Cette, Port Vendres, Marseilles, Tunis, Bizerta, Sousa, Bone, Algiers, and Philippeville.			
Cambrai	611	120	do			
Ville de Dunkerque.	756	150	do			
N. Verheekmoeda.	777	170	do	2.90	9.65 to 19.30	Do.
President Leroy Lallier.	750	160	do			
Ville de Marseille.	799	200	do			
Frédéric Morel.	822	160	do			
Nantes-Bordeaux.	880	225	do			
Ville d'Arras ..	985	250	do			
Bossut-lichen:						
St. Jean	244	50	Boulogne, Havre, Brest, Lorient, Nantes, Rochefort, La Pallice, and Bordeaux.	2.96½	3.86 to 9.65	Do.
St. Andrié	313	60	do			
Jeanne d'Arc ..	361	70	do			
Noël Dubuisson:						
René	583	140	Havre, St. Nazaire, Bordeaux, Marseilles, Algeria, and Tunisia.			Monthly.
Marguerite	651	120	do			
Antillon	849	180	do			
Noël	1,030	180	do			
G. Beck:						
Emilie	470	125	do	2.80½	9.65 to 19.30	Irregularly.
Compagnie Havraise Péninsulaire, Havre:						
Ville de Malaga.	882	150	do			
Ville de Riposto.	865	130	do			Weekly.
Ville de Messine.	797	130	do			

Regular lines of steamers running from and to Dunkirk—Continued.

Companies and steamers	Net tonnage	Horse power.	Dunkirk to—	Freight per ton.	Fare.	Sailings.
Compagnie Générale Transatlantique Havre:						
Le Morbihan	506	200	Havre, St. Nazaire, Bordeaux, Marseilles, Algeria, and Tunis	2.89	9.65 to 19.30	Irregularly.
Le Gard	779	300	do			
Le Tarn	787	300	do			
Le Calvados	787	300	do			
Fournel	1,217	220	do			
Alexandre Bixio	1,478	180	do			
Flachat	1,495	280	do			
Messageries Maritimes, Marseilles:						
Cordouan	2,094	350	Australasia and River Plate.	a 2.20 b 2.89 to 3.47	a 96.50, 193.00 and 231.60 c 77.20 to 193.00	Do.
Adour	2,154	350	do			
Orlégal	2,631	350	do			
Dordogne	2,636	525	do			
Matapan	2,648	350	do			
Médoc	2,648	350	do			
Charente	2,693	525	do			
Armand Béhic.	2,822	1,000	do			
Société Anonyme de Denain and Anzin:						
Galindo	424	144	Havre and Bilbao	1.64	5.79 to 11.58	Fortnightly.
San Martin	733	190	do			
Devès and G. Chaumet, Bordeaux:						
Cayor	1,025	140	Senegal	3.47	15.44 to 25.00	Monthly.
Chevillotte Frères, Brest:						
Amérique	258	40	River Plate	b 3.09 to 3.47	77.20, 115.87 and 154.89	Frequently during the season.
Penfold	472	90	do			
Charles	478	124	do			
Compagnie des Chargeurs Réunis, Havre:						
Ville de Maranhao	1,402	300	do	b 3.09 to 3.47	77.20, 115.80 and 154.89	Do.
Ville de Macelo	1,402	300	do			
Ville de Ceará	1,699	300	do			
Portena	1,374	300	do			
Belgrano	1,602	150	do			
Campagna	1,616	360	do			
Colombia	1,616	500	do			
Colonia	1,616	360	do			
Corsica	1,616	360	do			
Concordia	1,616	360	do			
Caravellas	1,625	365	do			
Entre Rios	1,661	350	do			
Santa Fé	1,661	350	do			
Cordoba	1,675	250	do			
Dom Pedro	1,834	325	do			
Rio Negro	1,970	387	do			
Parahyba	1,986	160	do			
Uruguay	2,002	387	do			
Paraguay	2,012	500	do			
Allan Line, Glasgow.d	1,252-3,133	220-300	do				3.09 to 3.47	77.20, 115.80 and 154.89	Frequently.
Lamport & Holt, Liverpool.d	812-2,052	125-300	do			
J. Hoult, Liverpool.d	943-2,297	110-300	do			
R. P. Houston & Co., Liverpool.d	1,922	164-350	do			
Watts & Co., London.d	910-2,111	150-300	do			

a Australia.

b River Plate in cubic meters = 35.317 cubic feet.

c River Plate.

d The names, tonnage, and horsepower of the several steamers belonging to these lines are not given. The tonnage and horsepower given represent the highest and lowest of the steamers of each line.

Regular line of steamers running from and to Dunkirk—Continued.

Companies and steamers.	Net tonnage.	Horsepower.	Dunkirk to—	Freight per ton.	Fare.	Sailings.			
Houlder Bros., London. ^a	1,550-2,221	150-500	River Plate and Australia.	} b 3.09 d 2.20	e 145.98 g 145.98 to 196.00	} Frequently.			
Gellatly & Co., London. ^a	632-2,064	110-350	do						
Milburn & Co., London. ^a	561-3,014	98-650	do						
W. Lund, London. ^a	1,786-2,778	400-650	do						
McDougall, Greenock. ^a	976-2,175	270-450	do						
Green Shields, Cowie, & Co., Liverpool. ^a	2,241-4,129	350-750	Bombay						
Rankin & Co., Liverpool. ^a	1,362-2,787	320-375	do						
Thompson, Liverpool. ^a	1,092-2,823	300-360	do						
Hamilton, Fraser & Co., Liverpool. ^a	1,845-2,668	300-500	do				63.09 to 3.47	145.98	Do.
Alexander & Co., Liverpool. ^a	1,689-2,744	300-400	do						
Cayrew, Irvine & Co., Liverpool. ^a	1,330-2,619	250-475	do						
Mead, Son & Hussey, London: Casel	257	90	London	1.34	2.43	Two or three times a week.			
Rosendael	259	95	do	1.34	2.43	Do.			
Carey & Sons, London: Sir Robert Peel.	229	54	do	1.34	2.43	Triweekly.			
Goole Steamship Co.: Aire	324	130	Goole	1.46	2.91	Semiweekly.			
T. Wilson, Hull: Humber	386	90	Hull	1.46	2.91	Do.			
Gibson & Co., Leith: Abbotsford	656	100	Leith	} 1.70	3.65	Do.			
Antiquary	669	100	do						
Cork Steamship Co.: Egret	672	175	Liverpool	2.43	3.65	Weekly.			
Duin Kerakshe: Stoomb Reedery. Vollenhoeven	128	30	Rotterdam	.97	2.43	Do.			
Koch & Co., Copenhagen: Pan	658	100	Baltic	1.70	12.15	Fortnightly.			
H. Carl, Copenhagen: Dan	925	160	do	1.70	12.15	Do.			
E. Pederson, Ros- tock: Theodor Burchard	569	75	Germany	1.45	9.78	Monthly.			
Companhia Thetis, Lisbon: Rio Tejo	563	30	Lisbon	1.93	13.51	Do.			

^a The names, tonnage, and horsepower of the several steamers belonging to these lines are not given. The tonnage and horsepower given represent the highest and lowest of the steamers of each line.

^b River Plate, per cubic meter = 35.317 cubic feet.

^c River Plate.

^d Australia.

5. BOULOGNE.

OCEAN LINES.—Boulogne ranks next in importance among the French ports.

The Northern Railway Company of France runs fifteen express trains daily to this port, and a large number of freight trains, transporting a great number of passengers and enormous quantities of freight between the United Kingdom and all points in France and on the Continent.

The Southeastern Railway Company operates a line of steamers between Boulogne and Folkestone, with two departures daily from each port. The fleet is composed of the *Albert Victor*, *Mary Beatrice*, *Louise Dagmar*, *Achille*, *Adam*, *Elborall*, *Folkestone*, and *Boulogne*.

The Bennett Steamship Company runs a line of five steamers from Boulogne to London and Goole, names and tonnage as follows:

Vessel.	Tons.	Vessel.	Tons.
Burma.....	700	India.....	268
Malta.....	676	Not yet launched.....	750
China.....	449		

There are three departures per week for Goole and three for London, with corresponding arrivals. The Goole steamers can call at Hull, and there are also supplementary boats when traffic requires it, as often happens. The company is prepared to ply between Boulogne and any port in England.

The Compagnie Générale des Bateaux à Vapeur à Hélice du Nord, of Dunkirk, performs a weekly service between Boulogne and Bordeaux, calling at Lorient, Rochefort, La Rochelle, and St. Nazaire.

The steamers of the Netherlands Company, from Rotterdam to New York, call regularly at Boulogne on their weekly outward and homeward trips. The fleet in this service is composed as follows:

Vessel.	Tons.	Vessel.	Tons.
Spaardam.....	4,368	Obdam.....	3,657
Maasdam.....	3,984	Werkendam.....	3,657
Veendam.....	4,036	Rotterdam.....	3,320
Amsterdam.....	3,620		

During the summer, the Palace Steamer Company runs daily a large steamer between London, Ramsgate, and Boulogne, via Gravesend.

In addition to the foregoing, Boulogne is served by various lines of steam and sailing vessels running to all the principal French and English and North Sea ports.

Passenger rates from Boulogne are:

Port.	First class.	Second class.	Third class.	Port.	First class.	Second class.	Third class.
New York.....	\$71.22	\$48.25	\$15.44	La Rochelle.....	\$5.40	.....	\$2.90
London:				Rocheport.....	5.40	.....	2.90
Winter.....	7.85	5.79	3.38	Bordeaux.....	5.79	.....	2.90
Summer.....	2.31	1.83	.....	Bayonne.....	5.79	.....	2.90
L'Orient.....	4.82	.....	2.90				

a Palace steamers.

Freight rates from Boulogne are quoted at from 5 to 30 shillings (\$1.22 to \$7.30) per English ton to London, and from 10 to 20 francs (\$1.93 to \$3.86) to Bordeaux, the figures varying between the minimum and maximum stated, according to the nature of the merchandise, the season, etc.

6. ROUEN.

The sixth port of France is Rouen; all the regular lines serving this port also serve Havre, and full particulars regarding them have already been given.

7. CALAIS.

Calais has become of recent years an important port. The Calais-Dover line between France and England carried in 1893, 226,234 passengers, and has transported in one year (1889) as many as 346,934 passengers. There are three daily mail services, each way, on this line, which includes fifteen steamers with an aggregate tonnage and horsepower of 3,165 and 5,175 respectively. There is also a weekly service between Calais and Goole by the Cooperative Wholesale Company's steamer *Nominal*; a regular service between Calais and London by the Vendroux line, and a petroleum tank line to Philadelphia, making about seven round trips per annum. Freights to London, 4 shillings to 5 shillings 6 pence (97.3 cents to \$1.34) per ton.

8. LA PALLICE.

An important transportation service by both freight and passenger steamers is performed by the Pacific Steam Navigation Company, whose steamers between Liverpool and Brazil, the River Plate and the west coast of South America, put in regularly at the French port of La Pallice (La Rochelle). The fleet engaged in this service consists of fifteen vessels, with an aggregate tonnage of 64,611 and a total horsepower of 57,000, which arrive at and depart from La Pallice every fourteen days.

9. MISCELLANEOUS OCEAN LINES.

The various ocean and coastwise lines, enumerated in the foregoing, are owned by corporations, but most of them receive substantial subventions from the governments for the transportation of mails, and some of them are liberally subsidized, the condition being that their

ships shall be constructed with a view to their transformation into men of war in case of emergency, in which event they may be acquired by the government upon certain stipulated terms. In addition to the regular lines hereinbefore enumerated, there is a great number of vessels, mostly sailing craft, plying with more or less regularity between France and other countries in various parts of the world, either trading on their owner's private account, or chartered for special cargoes, or carrying freight (and sometimes passengers), as offered.

TOTAL ENTRANCES AND CLEARANCES AT FRENCH PORTS.

The official statistics of navigation show that, during the year 1893, 28,643 vessels of all kinds entered French ports, their aggregate tonnage being 13,853,844, while the number of departures was 29,382, with an aggregate tonnage of 14,168,482.

During the same period 2,402 vessels plying between foreign countries touched at French ports, to take on or discharge freight and passengers.

During the same year the arrivals and departures of vessels in the coastwise service aggregated 27,998, representing a total tonnage of 1,982,070. In the ocean and coastwise service to and from French ports there were therefore a grand total of 88,425 arrivals and departures of vessels of all kinds during the year 1893.

RAILWAYS.

The general railway system of France consists of seven principal systems, the designation of which, together with the mileage under operation on December 31, 1892, was as follows:

Name of system.	Length.	
	Kilometers.	Miles.
Nord (Northern).....	3,612	2,244.49
Est (Eastern).....	4,560	2,833.55
Ouest (Western).....	5,172	3,215.88
Orléans (Orleans).....	6,375	3,961.41
Paris-Lyon-Méditerranée (Paris, Lyons, and Mediterranean).....	8,529	5,296.96
Midi (Southern).....	3,037	1,887.19
État (State).....	2,665	1,656.03
Total.....	33,950	21,095.51

Six of these systems are operated by independent corporations, holding special charters and concessions from the State. At the termination of these concessions, the lines and all the property of the several companies will pass into the possession of the Government. The interest on the shares and obligations of the several companies is guaranteed by the State upon certain conditions for a definite period. A specified revenue is reserved to the shareholders, and is guaranteed by the Government, so that, if the earnings of the systems, over and above operating expenses, are not sufficient to cover the amount so fixed, the deficit must be supplied from the national treasury.

For the six grand systems, the excess of revenue over and above the amount thus set aside for the shareholders is required to be paid to the Government in reimbursement of all advances made from time to time on account of the guarantees, with interest upon the same at the rate of 4 per cent per annum. After such reimbursement has been effected, certain fixed sums are payable to the shareholders, to which are added, in the case of the Northern Railway Company, variable sums, to be applied, under certain conditions, to the ultimate amortissement (redemption) of the shares.

The excess of revenue after this payment shall have been made is designated as net profits, of which two-thirds are to be payable into the national treasury and one-third to the shareholders. The subjoined table shows the date at which the several concessions expire, the dates from which the State reserved the right to resume the concessions (upon certain conditions), and the duration of the guarantees:

Name of company.	Date—		Expiration of guarantees.
	Of expiration of concession.	From which the State has the option to resume concessions.	
1. Northern	Dec. 31, 1960	Jan. 1, 1867	Dec. 31, 1914
2. Eastern	Nov. 28, 1954	Nov. 27, 1870	Dec. 31, 1934
3. Western	Dec. 31, 1956	Jan. 1, 1884	Dec. 31, 1935
4. Orleans	do	Jan. 1, 1873	Dec. 31, 1956
5. Lyons and Mediterranean:			
Principal system	Dec. 31, 1958	Jan. 1, 1875	Dec. 31, 1914
Rhône to Mont Cenis	Dec. 31, 1955	Jan. 1, 1871	
6. Midi (Southern)	Dec. 31, 1960	Jan. 1, 1877	Dec. 31, 1960
7. Belt Railway, city circle	Dec. 11, 1952		
8. Belt Railway	Dec. 31, 1958		

The Ceinture and Grand Ceinture (belt railways) of Paris, which make a circle of the city and also connect it with all the immediate suburbs, comprising an aggregate length of 117 kilometers (72.7 miles), are also operated by syndicates, the one composed of the Northern, Western, Eastern, Orleans, and Lyons-Mediterranean companies, and the other of the same companies with the exception of the Western. The concessions for the ceinture lines will expire, respectively, December 11, 1952, and December 31, 1958.

All the systems mentioned in the foregoing have their headquarters in Paris, excepting the Midi, which has its chief offices at Bordeaux.

The réseau de l'état, or Government system, with a total mileage of 2,665 kilometers (1,656 miles) is operated directly by the State. The management of this system, as well as the close supervision of all the railways in the country, including local and suburban railways, industrial and mining railways, narrow-gauge lines, tramways, etc., is confided to the ministry of public works, one of the great departments of the Government, presided over by a minister of state.

The following are the termini of the several railroad systems and the important points touched by each:

NORD—MAIN LINES.

In kilometers, 1=0.62137 mile.

Termini and principal intermediate stations.	Dis- tances.	Termini and principal intermediate stations.	Dis- tances.
	<i>Kilo- meters.</i>		<i>Kilo- meters.</i>
Paris to Calais:		Paris to Calais:	
Creil	51	Arras	192
Amiens	131	Bothune	231
Abbeville	176	Hazebrouck	265
St. Valery	195	Dunkirk	305
Boulogne-sur-Mer	254	Calais	316
Calais	295	Paris to Maubeuge:	
Paris to Turcoing:		Complègne	84
Longeau	126	St. Quentin	154
Arras	192	Aulnoye	216
Donai	218	Hanmont	234
Lille	250	Maubeuge	239
Roubaix	255	Paris to Anor:	
Turcoing	257	Soissons	105
Paris to Valenciennes:		Laon	140
Aulnoye	216	Vervins	179
Le Quesnoy	232	Herson	197
Valenciennes	251	Anor	205

NORD—PRINCIPAL BRANCH LINES.

Lille to Calais:		Arras to Boulogne sur Mer:	
Hazebrouck	47	St. Pol	39
Dunkirk	87	Etaples	100
Calais	197	Boulogne sur Mer	128
Laon to Rouen:			
Tergnier	5		
Amiens	80		
Rouen	117		

EST—MAIN LINES.

Paris to Avricourt:		Paris to Delle:	
Chateau Thierry	95	Troyes	167
Epernay	142	Bar sur Aube	221
Chalons sur Marne	173	Chaumont	262
Bar le Duc	254	Langres	297
Commercy	295	Vesoul	361
Toul	320	Lave	411
Nancy	363	Belfort	443
Luneville	366	Delle	465
Avricourt	412	Paris to Givet:	
Paris to Andun:		Epernay	142
Rheims	172	Rheims	172
Mezières	260	Rethel	194
Sedan	276	Mezières	244
Montmédy	325	Givet	306
Longuyon	346		
Andun	370		

EST—PRINCIPAL BRANCH LINES.

Chalindrey to Nancy:		Gretz to Vitry le Francois:	
Martigny les Bains	58	Coulommiers	72
Coutreville	68	Esternay	116
Vittel	78	Sexanne	132
Mirecourt	97	Vitry le Francois	203
Nancy	157		
Nancy to Gray:		St. Hilaire to Homecourt Jœuf:	
Epinal	74	Ste. Mencheuld	62
Vesoul	167	Verdun	107
Gray	225	Homecourt Jœuf	160
Nancy to Longwy:		Lerouville to Sedan:	
Pagny sur Moselle	38	Verdun	55
Ouville	46	Remilly	141
Longuyon	112	Pont Mangis	143
Longwy	128	Sedan	168

OUEST—MAIN LINES.

In kilometers, 1 = 0.62137 mile.

Termini and principal intermediate stations.	Distances.	Termini and principal intermediate stations.	Distances.
	<i>Kilo-meters.</i>		<i>Kilo-meters.</i>
Paris to Dieppe:		Paris to Dieppe:	
Pontoise	29	Oissel	126
Le Treport	119	Rouen	136
Neufchatel en Bray	134	Cleres	161
Dieppe	168	Dieppe	201
Paris to Havre:		Paris to Cherbourg:	
Mantes	58	Mantes	58
Vernon	80	Evreux	108
Oissel	126	Bernay	159
Rouen	140	Lisieux	191
Yvetot	178	Caen	239
Havre	228	Bayond	269
Paris to Brest:		Valognes	343
Versailles	17	Cherbourg	371
Chartres	88	Paris to Angers:	
Nogent le Rotron	149	Versailles	17
Le Mans	211	Chartres	88
Laval	301	Le Mans	211
Vitre	336	La Suze	230
Rennes	374	Juigne sur Saone	254
Montfort	396	Sable	259
Guingamp	506	Angers	308
Morlaix	564		
Brest	624		
Paris to Granville:			
Versailles	17		
Dreux	32		
Vernueil	118		
Laigle	141		
Argenton	197		
Vire	271		
Granville	328		

OUEST—PRINCIPAL BRANCH LINES.

Paris to Alençon:		Caen to Le Mans:	
Chartres	88	Falaise	52
Conde	141	Argenton	68
Mortagne	171	Alençon	111
Alençon	208	Le Mans	167
Lison to Lamballe:		Caen to Laval:	
St. Lo	19	Comfront	89
Coutances	48	Mayenne	126
Aoranches	94	Laval	157
Dol	138		
Dinan	166		
Lamballe	207		

ORLEANS—MAIN LINES.

Paris to Bordeaux:		Paris to Montauban:	
Etampes	56	Orleans	121
Orleans	121	Vierzon	200
Blois	178	Chateauroux	273
Tours	234	Limoges	400
Chateaurault	299	Brive	499
Poitiers	332	Gourdon	558
Ruffec	398	Calocs	599
Angouleme	445	Montauban	662
Libourne	543	Paris to Eygurande Merlines:	
Bordeaux	578	Vierzon	200
Paris to Agen:		Bourges	232
Limoges	400	St. Auran Mont	277
Perigueux	499	Montluçon	326
Eiorac	563	Eygurande Merlines	419
Mousempron	608	Paris to Le Croisic:	
Agen	651	Tours	234
Paris to Toulouse:		Saumur	295
Limoges	400	Angers	339
Brive	499	Ancenis	394
Tigeac	589	Nantes	427
Villefranche de Rouergue	624	St. Nazaire	491
Gaillac	694	Le Croisic	516
Toulouse	748		

ORLEANS—PRINCIPAL BRANCH LINES.

In kilometers, 1=0.62137 mile.

Termini and principal intermediate stations.	Dis- tances.	Termini and principal intermediate stations.	Dis- tances.
	Kilo- meters.		Kilo- meters.
Saranay to Landerneaux:		Bourges to Beanne la Rolande:	
Redon	42	Argent	62
Vannes	96	Les Bordes	94
Lorient	150	Bellegarde Quieres	121
Quimper	215	Beanne la Rolande	135
Chateaulin	245	Poitiers to St. Sulpice:	
Landerneau	299	Montmorillon	54
Bordeaux to Le Buisson:		St. Sulpice	126
Libourne	36	Tours to Montlucon:	
Bergerac	97	Loches	47
Le Buisson	134	Chateauroux	118
Bordeaux to Brivé:		Montlucon	105
Libourne	36	Angouleme to Limoges:	
Contras	52	Roumazares	53
Pereguieux	127	Saillat Chassenon	74
Brivé	199	Limoges	118
Limoges to Clermont Ferrand:			
Meymac	97		
Eygurande Merlines	181		
Volvic	197		
Clermont Ferrand	217		

PARIS-LYONS-MEDITERRANEAN—MAIN LINES.

Paris to Marseilles:		Lyons to Geneva:	
Melun	45	Amberlon	52
Fontainebleau	59	Geneva	168
Sens	113	Lyons to Grenoble:	
Joigny	146	La Tour du Pin	57
Tonnerre	197	Grenoble	121
Dijon	513	Paris to Lyons:	
Beaune	352	Melun	45
Chalon sur Saone	383	Fontainebleau	59
Macon	440	Montargis	118
Trevoax	486	Glon	155
Lyons	512	Cosne	196
Vienne	543	Nevers	254
Valence	618	Moullins	313
Montelmar	662	La Palisse	372
Avignon	742	Roanne	421
Arles	777	Lyons	507
Marseilles	863	Roanne to Lyons:	
Marseilles to Vintimille:		St. Etienne	77
Toulon	67	Lyons	135
Nice	225	Macon to Geneva:	
Vintimille	260	Bourg	36
Dijon to Pontarlier:		Culoz	119
Dole	47	Bellegarde	152
Pontarlier	140	Geneva	186
Dole to Belfort:		St. Germain des Fosses to Nimes:	
Besancon	92	Gannat	24
Montbelliard	170	Clermont Ferrand	65
Belfort	188	Issoure	100
Lyons to Nimes:		Brioude	135
Givros	21	Alels	320
Tournon	93	Nimes	369
Nimes	280	Tarazon to Certe:	
Culoz to Modane:		Nimes	28
Chambery	36	Montpellier	77
St. Jean de Maur	107	Certe	105
Modane	134		

PARIS-LYONS-MEDITERRANEAN—PRINCIPAL BRANCH LINES.

In kilometers, 1 = 0.62137 miles.

Termini and principal intermediate stations.	Distances.	Termini and principal intermediate stations.	Distances.
	Kilo-meters.		Kilo-meters.
Dijon to St. Amour:		Grenoble to Marseilles:	
Louhans	88	Sisteron	159
St. Amour	113	Aix	276
Lyons to Bellegarde:		Marseilles	305
Bourg	59	Laroche to Nevers:	
Bellegarde	123	Auxerre	19
Amberieu to Vesoul:		Clamecy	72
Bourg	83	Nevers	147
Lous le Sannier	147	Nevers to Chagny:	
Poligny	176	Etang	105
Besançon	287	Chagny	168
Vesoul	301	Cravant to Autun:	
Valence to Chambéry:		Avalon	88
Grenoble	99	Autun	125
Chambéry	161	Clermont to St. Etienne:	
Livron to Briançon:		Thiers	39
Die	54	Montbrison	104
Veynes	117	St. Etienne	137
Gap	143		
Embrun	181		
Briançon	226		

MIDI—MAIN LINES.

Bordeaux to Cette:		Montauban to Montpellier:	
Marmande	79	Lesaur	59
Agen	136	Castres	99
Montauban	206	St. Pons	153
Toulouse	257	Paulhan	229
Castelnaudary	312	Montpellier	259
Carcassonne	348	Toulouse to Bayonne:	
Narbonne	407	Muret	21
Beziers	432	St. Gaudens	91
Cette	476	Tarbes	157
Narbonne to Fort Bon:		Fau	216
Perpignan	64	Orthes	256
Elne	78	Bayonne	322
Fort Bon	107	Bordeaux to Hendaye:	
Beziers to Neusargues:		Dax	148
Bedarieux	43	Bayonne	198
Tournesièrre	93	Hendaye	233
Millau	118	Morceux to Tarbes:	
Marvejols	189	Mont de Marsan	148
St. Flour	258	Tarbes	246
Neusargues	277		

MIDI—PRINCIPAL BRANCH LINES.

Castelnaudary to Carmaux:		Agen to Riscle:	
Castres	56	Nerac	39
Albi	104	Condom	60
Carmaux	119	Eauze	94
Toulouse to Ax les Thermes:		Riscle	116
Poit	83	Agen to Tarbes:	
Ax les Thermes	124	Auch	70
Mont de Marsan to Marmande:		Vic Bigorre	135
Casteljaloux	73	Tarbes	148
Marmande	98		

ÉTAT—MAIN LINES.

Paris to Bordeaux:		Nantes to Bordeaux:	
Chartres	88	La Roche sur Yon	77
Saumur	286	La Rochelle	190
Niort	415	Rochefort	209
Saintes	492	Saintes	253
Bordeaux	618	Bordeaux	379
Tours to Les Sables d'Olonne:			
Chinon	50		
Thouars	96		
Les Sables d'Olonne	251		

ÉTAT—PRINCIPAL BRANCH LINES.

In kilometers, 1=0.62137 mile.

Termini and principal intermediate stations.	Distances.	Termini and principal intermediate stations.	Distances.
	Kilometers.		Kilometers.
Nogent le Rotrou to Orleans:		Pons to La Greve:	
Chateaudun	83	Saujon	28
Passy	92	Royan	47
Orleans	116	La Greve	61
Angers to Poitiers:		Nantes to Poitiers:	
Loudun	87	Clisson	27
Poitiers	167	Cholet	68
Poitiers to La Rochelle:		Bressuire	113
Niort	78	Parthenay	147
Rochefort	142	Poitiers	203
La Rochelle	145		

TRAIN ACCOMMODATIONS AND CHARGES.

On all the foregoing trunk lines, through passenger trains are run daily. These include the express or fast trains, stopping only at important points, and the "omnibus" or accommodation trains, which stop at every station.

The railway cars or voitures (carriages) are divided into several (usually five) compartments, of the first, second, and third classes.

Some of the fast through trains carry only first and second class passengers; others, as well as all of the omnibus trains, carry all classes of passengers. In each class separate compartments for women, and also for smokers, are required to be provided. Sleeping and dressing room compartments and dining cars are also attached to the through trains on all the principal lines. For these accommodations special charges are made, in addition to the first-class fares.

The passenger and freight rates are regulated by the Government. No change of any kind can be made in either without the approval of the minister of public works. The freight and passenger tariffs are revised from time to time, but important changes are infrequent. The passenger rates now in force are as follows:

First class, 0.112 franc per kilometer ($3\frac{1}{2}$ cents per mile); second class, 0.0756 franc per kilometer ($2\frac{1}{2}$ cents per mile); third class, 0.0493 franc per kilometer ($1\frac{1}{2}$ cents per mile). These are the rates for single tickets. Return, or round-trip tickets, good for one to eight days, are sold on all lines at a discount from the above rates of 20 to 40 per cent.

For fête days or holidays and on special occasions, for great celebrations or demonstrations of any kind, large reductions are made for tickets, good from one to eight days, and usually only for certain trains. Soldiers and sailors are carried at one-fourth of the regular fares; children under 7 years of age at half fares. Weekly, monthly, and quarterly commutation tickets are sold between the large cities and suburbs and adjacent towns at reductions of about 50 per cent from the regular tariff. Workingmen's and students' commutation tickets, for use in going daily to and from places of employment and educational institutions, are sold at a discount averaging 50 per cent. No ticket

is sold for any distance for less than 30 centimes (about six cents). Thirty, sixty, and ninety day excursion tickets are sold for the different winter and summer resorts in France and adjacent countries from all points in France, good on all trains, at liberal reductions from the schedules. Circular tickets, good for a certain specified period, and embracing all the points on certain lines or within a certain radius, are sold also on very favorable terms.

Persons who wish to visit in succession a number of points in France, or in the neighboring countries, can, by giving a reasonable notice in advance, secure tickets covering the desired itinerary at the same discounts offered by the different companies for the itineraries arranged by themselves.

By the payment of 260 francs (\$67.50), a certificate can be secured entitling the purchaser for the period of one year to transportation between any two points in France at one-half the schedule rates. Sixty pounds of baggage is carried free for passengers of every class. All baggage in excess of this amount is charged for at the rates for merchandise forwarded by express. A charge of 10 centimes (about 2 cents) is made for registering (or checking) each piece of baggage.

EXPRESS AND FREIGHT RATES.

Ordinary merchandise is carried by express (on passenger trains) at the rate of 0.35 franc (about 7 cents) per ton per kilometer (0.62137 mile), with a reduction of 33 per cent on packages not weighing over 40 kilograms (88.18 pounds). Packages exceeding 1,000 kilograms (1 ton of 2,204.6 pounds) in weight are not carried by express. The charges for dogs, by express, are 0.168 franc per kilometer (5½ cents per mile; horses, 0.16 franc per kilometer (5 cents per mile).

Freight rates are as follows: Under 40 kilograms (88.18 pounds), 0.25 franc per ton per kilometer (7.7 cents per mile); between 40 and 3,000 kilograms, 0.40 franc per ton per kilometer (12½ cents per mile), and between 3,000 and 20,000 kilograms the rates are doubled.

The following articles are carried at a uniform rate of 0.06 franc per ton per kilometer (1.8 cents per mile): Firewood for domestic use, coke, coal, empty barrels, laths, lime, plants, sea salt, and timber. This special tariff is subject to occasional variation. The present rates for live stock are as follows: Cows, horses, mules, donkeys, 0.10 franc per kilometer (3.1 cents per mile); calves and pigs, 0.04 franc per kilometer (1.2 cents per mile); sheep and goats, 0.02 franc per kilometer (0.6 cent per mile). The rates for carriages are: Two-wheeled, 0.25 franc per kilometer (7.7 cents per mile); four-wheeled, 0.32 franc per kilometer (9.9 cents per mile).

CONDITION OF LINES.

On the 31st of December, 1894, the total length of railway lines in actual operation in France was 40,199 kilometers (24,978 miles). These lines are, as a general rule, substantially constructed and kept in very

good condition, although the average, both as regards construction and maintenance, is distinctly inferior to that of the railways in the United Kingdom. It is officially stated by the direction des chemins de fer (director of railways), that of the 40,000 kilometers of railway lines in actual operation; all but 2,000 kilometers is in good condition, i. e., not in need of material repairs. As regards rolling stock and general equipment, the railroads of France are deficient, compared with those of the United States and the United Kingdom. However, a distinct improvement has been made in these respects during the last few years. In the passenger service, some of the comforts and luxuries with which the traveling public of the United States has long been familiar, have been introduced, and more are promised. The express trains, on the chief lines, are run at very good speed. All through night passenger trains carry sleeping cars, and the corresponding day trains include dining cars and drawing-room cars. The compartment system is, however, maintained on all lines.

RAILWAY ACCIDENTS.

Accidents are comparatively infrequent, and the proportion of trainmen and passengers injured in transit is considerably less than in the United States. The Government supervision is very rigid, and the officials of the railroads are held to a sharp responsibility, not only for accidents, but for delays and other deficiencies in the train service. Every accident involving loss of life, or having other serious results, is promptly investigated, and if negligence or incompetency is proved to have been the cause, the persons derelict, including not only subordinates, but superintending officials, are summarily dealt with.

ENGINEERING DIFFICULTIES.

No extraordinary obstacles have been encountered in the construction of the railways of France, the topography of the country being generally favorable. In the mountain districts, a great deal of tunneling was necessary, and there are many bridges, culverts, etc., on the principal railways which were costly and are admirable pieces of work. But the railway system of France embraces no monuments of engineering skill and genius sufficiently notable to call for special mention here.

RIVER AND CANAL SERVICE.

The interior navigation of France, by rivers and canals, is very much developed. The freight traffic on the large rivers and the chief canals is very heavy, and during the summer a considerable number of passengers, chiefly tourists, are carried on the river steamboats.

The principal companies and firms engaged in operating regular lines on the rivers or canals are: La Compagnie Générale de Navigation, (Havre-Paris-Lyons—Marseilles); La Compagnie Française des Trans-

ports Fluviaux et Maritimes; La Compagnie de Navigation sur les Canaux du Centre; La Maison Frétigny; and La Maison Pavot Frères.

In addition to the regular lines, canal and river tonnage is always available in ample supply.

The tonnage of the canal lighters varies from 50 to 320 tons dead weight. A lighter can travel from Calais, via the canal system, through to Marseilles, if needed, and, in fact, the French Government torpedo boats have performed the journey several times. The number of kilometers of canals in operation January 1, 1895, was 4,805, and the length of navigable rivers at the same date was officially reported at 7,591 kilometers, making the total length of navigable canals and rivers 12,396 kilometers (7,703 miles).

The tonnage of shipments over these canals and rivers during the first eleven months of 1894 and the corresponding period of 1893 was as follows:

Description.	1894.	1893.
Canals	14, 558, 081	13, 630, 708
Rivers	10, 380, 099	9, 485, 738
Total	24, 938, 180	23, 116, 446

Increase of tonnage in 1894, 1,821,734.

The canals whose traffic is the most important are the following: St. Quentin (Cambrai to Chauny); Haute Deûle (Fort de Scarpe to Marquette and the branch to Seclin); Oise and Manicamp (Janville to Chauny); Aire (Bauvin to Aire and the branch to Noeux); Sensée (Etrun to Courchelettes); Marne à la Saône (Vitre le Francois to the German frontier); Latéral à l'Aisne (Vicax les Asfeld to Celles); Neufossé (Aire to St. Omer); St. Denis (Paris to the Briche); Aisne à la Marne (Berry au Bac to Conde sur Marne); Latéral à la Marne (Couvrot to the lock of Dizy); Southeast Branch (Belgian frontier to Troussey); Southeast Branch (Toul to Corre and the branch to Nancy); Oise à l'Aisne (Abbecourt to Bourg et Comin); Latéral à la Loire (Digoin to Briare and branches); Centre (Chalon sur Saone to the Loire); Bourbonnais (Guindal to Dunkirk).

The most important navigable rivers are the Seine (Montereau, through Paris and Rouen to Havre), on which an aggregate tonnage of 18,279,702 was carried during the first eleven months of 1894; the Escant (Cambrai to the Belgian frontier); the Oise (Janville to the Seine); the Scarpe (Arras to Mortagne); the Aa (St. Omer to Gravelines); the Garonne (Agen to the confluence of the Dordogne); the Saone (Corre to the confluence of the Rhone at Lyons); and the Rhone (Parc, through Lyons and Arles, to the Mediterranean).

The following are the companies operating the principal navigable river and canal lines in France: La Compagnie Française de Transports Fluviaux et Maritimes, which has recently absorbed the river

fleets of the *Compagnie Messageries Nationales*, and the *Compagnie de Transports Rapides*. The combined fleets number 144 boats, ranging from 150 to 1,000 tons each, with a total tonnage of 39,500 (45 steamboats, with a tonnage of 7,000, and 99 barges, with a tonnage of 32,500). This company operates on the River Seine, serving Havre, Rouen, Paris, Corbeil, Montereau, etc. Its annual traffic will reach 540,000 tons, consisting largely of grain, flour, oil, cotton, metals, lumber, etc.

There is a daily service between Paris, Rouen, Harfleur, and Havre; a triweekly through service between Paris and Havre (time of passage, four days); a daily service between Rouen and Elbeuf, and other regular and special services. These boats carry a vast quantity of heavy merchandise from Paris, Rouen, and other points for transshipment by ocean steamers from Havre. Freight rates per 100 kilograms (220.46 pounds) from Paris to Havre, and vice versa, are from 7 to 16 francs (\$1.35 to \$3.09), according to quantity; from Paris to Rouen, and vice versa, 5 to 12 francs (\$0.965 to \$2.32).

The *Société Générale Anonyme de Navigation sur les Canaux du Centre* operates lines between Paris, Roanne, and Lyons on the *Bourgogne* and the *Bourbonnais*. Its fleet consists of 220 boats, 30 by 5 meters (16.4 by 98.4 feet), with a total capacity of 48,896 tons. The traction on the canals is by animal power. There is no regular schedule of arrivals and departures, which are made to suit the demands of shippers. The distance between Roanne and Paris, 442 kilometers (275 miles), is covered in twenty-five days. The freight rates average 0.013 franc (\$0.0025) per ton (2,204.6 pounds) per kilometer.

The *Compagnie Générale de Navigation* carries an extensive traffic on the Seine, the Rhone, the Oise, the Aisne, the Saone and on many canals. The fleet of the company at present consists of 29 steam tugs, 39 steam carriers, and 505 barges. The largest barges have a tonnage of 800. The largest steamers serving on the Rhone have a tonnage of 600, and from 300 to 500 horsepower. A majority of the boats made for passing through the locks of the canals measure 30 by 5 meters (16.4 by 98.4 feet) and have a capacity of 200 to 280 tons.

The services are: Daily from Paris to Rouen and Havre; weekly by steam carriers from Havre and from Rouen to Rheims, touching at all the ports of the Oise and the Aisne; semiweekly departures by steamers from Paris to Rheims, touching at all the ports of the Oise and the Aisne; express service from Paris to Lyons, touching at all the localities of the Haute Seine, of the Yonne, of the Canal of Bourgogne, of the Doubs, and of the Saone: Montereau, Sens, Joigny, Troyes, Auxerre, Clamecy, Laroche, Tounerre, Montbard, Dijon, St. Jean de Losne, Gray, Dôle, Besançon, Chalon sur Saone, Macon, Villefranche sur Saone, Chalons sur Marne, St. Dizier; service of the "Centre," serving the canals of the Loing, Orléans, Briare, Latéral of the Loire, Berry, Centre-Montargis, Briare, Orléans, La Charité, Nevers, Decize, Roanne, Le Creusot; special services by steamers on the Rhone and the canals of

the Midi, from Lyons to Vienne, Valence, Avignon, Beaucaire, Arles, St. Louis du Rhone, Cette, Marseilles; passenger and freight service from Lyons, four departures per week, stopping at Givors, Vienne, Condrieu, Serriers, Audance, St. Vallier, Tournon, Valence, Le Teil, Bourg-St. Andeol, Pont St. Esprit, Avignon.

HIGHWAYS.

Reference has already been made to the magnificent system of public highways, extending to every section of the Republic, which is not surpassed in any country in the world. These great arteries of communication form an invaluable adjunct to the railway, river, and canal systems of France, and give practically every inhabitant of the country easy access to the markets. These highways have been made the subject of comprehensive and valuable reports by several United States consuls in France.¹

It has been estimated that the cost of wagon transportation on the highways of France does not average more than one-third the corresponding expense in the United States. In the rural districts it is customary to haul 3 tons, and in the cities from 3 to 5 tons, net freight with one horse. The highway system of France has been practically completed for many years, and it is only necessary to maintain it at its present standard, which is assured by a most efficient organization working under laws and regulations fortified by generations of rigid observance. The improved macadamized highways of France had a total length of 323,400 kilometers (200,951 miles) as long ago as 1867, while the length of unfinished highways was then stated at 281,100 kilometers (174,667 miles), most of which are now considered finished. What is regarded as an unfinished or unimproved highway in France, however, would be pronounced in many parts of the United States, and in nearly all countries, in fact, almost an ideal road.

The great national highways of France vary in width from 8 to 10 meters (26 feet 3 inches to 32 feet 10 inches); the departmental roads, from 6 to 8 meters (19 feet 8 inches to 26 feet 3 inches); and the communal roads, from 3 to 6 meters (9 feet 10 inches to 19 feet 8 inches). These widths do not include the ditches at the sides of the roads. From every important railway town regular lines of diligences, or mail coaches, run to neighboring villages, and the facilities for transportation of freight and passengers to points off the railroad lines are of the best.

ACKNOWLEDGMENTS.

For information embraced in this report, I am indebted to Messrs. Raymond, Schelle, and Abbecourt, leading officials of the ministry of public works. I also desire to acknowledge the valuable cooperation of Consuls Thomas, of Marseilles; Wiley, of Bordeaux; Chancellor, of

¹ See Special Consular Reports "Streets and Highways."

Havre; Shepard, of Calais; Savage, of Nantes, and Angell, of Roubaix, and of Consular Agents Moleux, of Boulogne sur Mer; Morel, of Dunkirk, and Pitel, of Brest.

SAMUEL E. MORSS,
Consul-General.

PARIS, March 15, 1895.

SPAIN.

PORT OF BARCELONA.

The port of Barcelona is shaped like a funnel. Its greatest length is from north to south, about 1 mile. Its greatest width is 3,608 feet. The depth of the water varies from 12 to 45 feet. The number and tonnage of vessels that entered in 1890, 1891, and 1892 were:

Year.	Number.	Tons.
1890.....	3,467	2,137,466
1891.....	3,477	1,902,936
1892.....	3,574	2,285,611

The nationality of the vessels entered in 1892 was as follows:

Nationality.	Number.	Nationality.	Number.
Spanish.....	2,610	English.....	342
German.....	40	Italian.....	248
Belgian.....	1	American.....	11
Danish.....	19	Russian.....	19
French.....	118	Norwegian.....	103
Greek.....	30	Turkish.....	1
Dutch.....	11	Austrian.....	19

Of these vessels, forty-eight were men of war.

OCEAN LINES.

La Compañía Transatlántica.—The most important line of steamers connecting this port with the rest of the world is *La Compañía Transatlántica*, which is composed of private individuals. It has a fleet of thirty steamers, all of which carry the mails between the various ports which they connect. The lines of this company are six in number. Antilles and Mexico Line, Philippine Line, Buenos Ayres Line, Fernando Po Line, Morocco Line, and Tangier Line.

(1) *Antilles and Mexico Line.*—The steamships assigned to the Antilles-Mexican Line are the following:

Name.	Registered tons.	Horse-power.	Name.	Registered tons.	Horse-power.
Montevideo.....	5,500	5,000	Alfonso XIII.....	5,200	6,000
Buenos Aires.....	5,500	4,800	Ciudad de Santander.....	3,700	4,200
Alfonso XII.....	5,500	5,000	Cataluña.....	3,700	4,200
Reina Maria Cristina.....	5,200	6,000	Antonio Lopez.....	3,700	4,000

Three trips are made to and from the Antilles, Progreso, and Vera Cruz every month by the steamers of this line. The first steamer leaves Barcelona on the 5th of each month, and proceeds to Malaga, Cadiz, Puerto Rico, Havana, Progreso, and Vera Cruz; the second steamer leaves Liverpool on the 11th of every month, and proceeds to Havre, Santander, Corunna, Puerto Rico, Havana, Progreso, and Vera Cruz; the third leaves Barcelona the 25th of every month, and proceeds to Malaga, Cadiz, Las Palmas, Puerto Rico, Havana, Progreso, and Vera Cruz. On their return trips, they leave Havana on the 10th, 20th, and 30th of every month. The steamer that leaves Havana on the 10th touches at Puerto Rico, and then proceeds to Cadiz; the steamer that leaves on the 20th goes directly to Cadiz, while the steamer that leaves on the 30th proceeds directly to Corunna and Santander. During the quarantine season (from May 10 to September 30), all these steamers proceed from Havana direct to Corunna or Santander.

In combination with this line there is a line of steamers between Havana and New York. From both ports the dates of departure are the 10th, 20th, and 30th. Other combinations are made with the Pacific Mail Steamship Company for the ports on the Pacific, from Panama to San Francisco, and with the Pacific Steam Navigation Company and the Sud-Americana de Vapores from Panama to Valparaiso.

The steamers of this company that ply between Havana and the Atlantic ports are the following: *Mejico* (2,112 tons), between Havana and Santiago de Cuba; *Ciudad Condal* (2,595 tons), between Vera Cruz and Havana; *Habana* (2,678 tons), between New York and Havana; *Panama* (2,085 tons), between New York and Havana; *M. L. Villaverde* (1,501 tons), between Havana and Santiago de Cuba.

The following steamers are put on this or on any of the other lines whenever the necessity arises:

Name.	Tons.	Horse-power.
<i>Espana</i>	2,700	1,600
<i>San Francisco</i>	2,700	1,800
<i>San Angustin</i>	2,400	1,700

The distances between the several places are:

From—	Miles.	From—	Miles.
Santander to Corunna	225	Puerto Rico to Santander	3,482
Corunna to Puerto Rico	3,805	Corunna to Santander	225
Puerto Rico to Havana	975	Havana to Progreso	444
Cadiz to Las Palmas	685	Havana to Vera Cruz	881
Las Palmas to Puerto Rico	2,849	Havana to New York	1,191
Cadiz to Puerto Rico	3,363	Havana to Santiago de Cuba	595
Havana to Puerto Rico	975	Havana to New Orleans	580
Havana to Cadiz	4,053	Havana to Savannah	613
Havana to Corunna	3,868	Havana to Charleston	643
Havana to Santander	4,066	Havana to Norfolk	981
Puerto Rico to Cadiz	3,345	Barcelona to Cadiz	596

The freight tariffs on the Antilles and Mexican Line are as follows per cubic meter or 1,000 kilograms (2,240.6 pounds):

To—	First class.	Second class.	Third class.	To—	First class.	Second class.	Third class.
	<i>a Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>		<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>
Puerto Rico	100			Puerto Cabello.....	100	75	50
Havana	100	75	50	Cartagena.....	100	75	50
Vera Cruz.....	100	75	50	Colon.....	100	75	50
La Guayra.....	100	75	50	New York.....	142	108	81

a A peseta is equal to 19.3 cents, but at the present time the value is much less on account of the high rate of exchange between Spain and the United States, which varies from 20 to 23 per cent.

The classification of merchandise is as follows:

First class.—Fans, cashmere, hair, ivory, shells, ribbons, laces, gloves, millinery goods, works of art, church ornaments, silk handkerchiefs, velvets, and similar articles.

Second class.—Arms, traveling articles, wax, chocolate and confectionery, cutlery, leather, boots and shoes, brushes, carriages, drugs, mirrors, artificial flowers, toys, books, linen and linen goods, haberdashery, furniture, willowware, cards, wool, woolen goods, paper and pasteboard boxes, writing paper, umbrellas, perfumery, pianos, chemical products, animal hair, porcelain, hardware, hats, seeds, belting, cotton goods, clothing, musical instruments, metal goods, watchmakers' goods.

Third class.—Oil, mineral water, olives, garlic, copper, nuts, starch, hemp sandals, rice, sugar, codfish, bitumen, bottles, candles, lime, cement, common shoes, hemp, onions, preserves, tie brooms, empty demijohns, iron nails, dried fruits, gum, biscuits, grain, flour, soap, hay, earthenware, liquids in casks or bottles, marble, machinery, iron and kitchen furniture, mill and grind stones, printing paper, macaroni and alimentary pastes, provisions, empty bags, grease, corks, ink, packing cloth, domestic utensils, common glassware, wine, and agricultural implements.

By special arrangements made with North and South American transportation companies, goods may be sent from Spain to the various Atlantic and Pacific ports at the following rates per cubic meter or 1,000 kilograms (2,204.6 pounds):

To—	First class.	Second class.	Third class.	To—	First class.	Second class.	Third class.
	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>		<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>
New Orleans.....	148	117	86	Punta Arenas, San			
Savannah.....	155	125	114	Juan del Sur,			
Charleston.....	164	145	121	Corinto, Cham-			
Georgetown.....	157	136	118	perico.....	165	120	100
Baltimore.....	154	130	100	San Benito, Aca-			
Philadelphia.....	147	118	97	pulco, San Blas,			
San Francisco.....	165	95	95	San Lucas.....	165	145	125
Boston.....	147	123	93	Buenaventura,			
Quebec.....	168	151	123	Manta.....	240	150	140
Panama.....	160	150	100	Callao.....	200	82	75
				Valparaiso.....	240	175	160

The return voyage freight charges per cubic meter or 1,000 kilograms (2,204.6 pounds) are:

From—	First group.	Second group.	Third group.
Havana and Puerto Rico	<i>Pesetas.</i> 90	<i>Pesetas.</i> 45	<i>Pesetas.</i> 35
La Guayra and Colon	185	160	105

The three groups above mentioned comprise: First, brandy and tobacco; second, sugar, leather, and metals; third, inferior sugar, cocoa, and coffee.

In all cases the company reserves to itself the right to charge either according to the cubic meter or the 1,000 kilograms, and passenger tickets bought outside of Spain must be paid for in francs¹ or their equivalent.

The passenger rates on the Antilles and Mexico Line are:

Barcelona to—	First class.	Second class.	Third class.	Steerage.
	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>
San Juan de Puerto Rico.....	850	500	450	175
Havana.....	900	600	450	175
Santiago de Cuba.....	900	600	450	175
Progreso.....	1,000	700	450	225
Vera Cruz.....	1,000	700	450	225
Colon, Puerto Limon, La Guayra.....	1,000	650	450	225
New York.....	1,150	735	535	485

(2.) *The Philippine Line.*—Thirteen round trips per annum are made to the Philippine Islands. The steamers employed on this line are the following:

Name.	Tons.	Name.	Tons.
Isla de Luzón.....	4,256	Montevideo.....	5,296
Isla de Mindanoo.....	4,124	Santo Domingo.....	2,805
Isla de Panay.....	3,544	San Francisco.....	2,526
San Ignacio de Loyola.....	3,227		

According to the schedule for 1893-94, the first steamer left Liverpool December 20, 1893, and the others were to follow exactly four weeks apart, touching at Corunna, Vigo, Lisbon, Cadiz, Cartagena, Valencia, and Barcelona, and proceeding from Barcelona to Manila, touching en route at Port Said, Suez, Aden, Colombo, and Singapore. On their return, they touch at all the ports mentioned, and also at Santander, the only exception being Colombo, which they avoid during the southwest monsoon, from April until October.

On this line, as on all the other lines of this company, passenger tickets, if bought in Spain, are paid for in pesetas, but if bought in other

¹The franc, lira, and peseta mentioned throughout this report are each valued at 19.3 cents by the United States Treasury Department.

countries they must be paid for in francs or their equivalent. Tickets purchased in Spain, therefore, are cheaper, owing to the exchange. Return tickets, good for nine months, may be had at a reduction of 28 per cent, and for a year at a reduction of 17 per cent. The price of tickets is as follows:

Barcelona to—	First class.	Second class.	Third class.	Steerage.
	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>
Port Said	400	320	180	.....
Suez	450	360	180	.....
Aden	875	700	350	.....
Colombo	1,000	700	300	.....
Singapore	1,375	1,000	600	.....
Manila	1,780	1,460	660	455
Valencia	35	25	20	15
Cartagena	60	50	30	20
Malaga	90	75	50	30
Cadiz	110	90	60	45
Vigo	160	115	80	55
Corunna	185	130	95	72
Santander	210	155	105	82
Havre	240	185	125	100
Liverpool	300	240	145	110

The freight charges on the Philippine Line, per cubic meter or 1,000 kilograms (2,204.6 pounds) are:

Barcelona to—	First group.	Second group.	Third group.	Fourth group.
	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>
Port Said	20	10	.....	.....
Suez	35	12	.....	.....
Aden	60	40	27.67	.....
Colombo	75	50	34.72	.....
Singapore	80	60	41.66	.....
Manila	100	70	50 to 60	45 to 60

The freight charges to ports connected with the ports at which this line of steamers touch are:

To—	First group.	Second group.	Third group.	To—	First group.	Second group.	Third group.
	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>		<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>
Bombay	59.57	55.17	46.34	Batavia	80	60	48.61
Kurrachee	66.34	64	55.17	Saigon	80	60	41.66
Bushire	76.12	71.71	62.89	Hongkong	80	60	48.61
Mozambique	125	100	69.44	Shanghai	100	70	48.61
Zanzibar	125	100	69.44	Hioogo	100	70	55.55
Sydney	80	60	48.61	Yokohama	100	70	55.55
Calcutta	80	60	41.66				

The articles comprised in the various groups are:

First.—Fans, mineral water, chocolate, confectionery, fruits, images, hams, printed books, metals, cards, pepper, chemical and pharmaceutical products, jewelry, clothing, vinegar, and cheese.

Second.—Oil, almonds, brandy, rice, codfish, salt meat, preserves, cork, beans, flour, tin, butter, marble, furniture, sardines, and wine.

Third.—Rubber, candles, shoes, musical instruments, soap, liquors, carriage and railway materials, organs, perfumery, pianos, lead, provisions, hats, silk, wool, cotton, and lace goods.

Fourth.—Cement, beer, drugs, iron, porcelain, wood, machinery, paper, pictures, and glass.

The return freight charges are: First group, 100 pesetas; second group, 85 pesetas; third group, 75 pesetas; fourth group, 60 pesetas.

The first group includes coffee, silk, porcelain, tobacco, and tea; the second group, sugar; the third group, cocoa oil, cotton, wood, hats, and cigarette paper; the fourth group, sugar and cocoa.

The distances covered by the steamships of the Philippine Line are:

From and to—	Miles.	From and to—	Miles.
Liverpool to Corunna	694	Cartagena to Valencia	155
Corunna to Santander	225	Valencia to Barcelona	162
Santander to Liverpool	683	Barcelona to Port Said	1,630
Corunna to Vigo	120	Port Said to Suez	87
Vigo to Lisbon	239	Suez to Aden	1,308
Lisbon to Cadiz	240	Aden to Colombo	2,094
Vigo to Cadiz	464	Colombo to Singapore	1,571
Cadiz to Cartagena	311	Singapore to Manila	1,343

(3) *Buenos Ayres Line.*—A steamer of the Buenos Ayres Line leaves Marseilles on the 7th of January, and every two months thereafter during the year 1894, touching at Barcelona, Malaga, Cadiz, Santa Cruz de Tenerife, and Montevideo. The following are the vessels comprising this line:

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Ciudad de Cadiz	3,200	3,000	Ciudad de Santander	3,700	4,200
Antonio Lopez	3,700	4,000	Cataluña	3,700	4,200

The passenger rates on the Buenos Ayres Line are: First class, 800 to 1,000 francs; second class, 500 francs; third class, 200 to 300 francs. There is a reduction of 20 per cent for return tickets, good for a year, and of 25 per cent for a family of four persons.

The freight rates on the Buenos Ayres Line are: From Spain to Montevideo or Buenos Ayres, per cubic meter, 20, 35, 45, and 49 pesetas, according to the class of freight.

The distance from Cadiz to Buenos Ayres is 5,280 miles; from Barcelona to Cadiz, 596 miles.

(4) *Fernando Po Line.*—Of the Fernando Po Line, the steamers *Larache*, of 1,500 tons and 700 horsepower, and the *Fernando Po*, of 127 tons and 130 horsepower, leave Barcelona on the 25th of December, March, June, and September, and leave Fernando Po, on their return, on the 5th of February, May, August, and November.

The passenger rates on the Fernando Po Line are:

Barcelona to—	First class.	Second class.	Third class.	Barcelona to—	First class.	Second class.	Third class.
	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>		<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>
Cadiz	110	90	45	Setra Eron	500	334	166
Las Palmas	300	200	100	Fernando Po	638	426	213
Río de Oro	230	186	93	Elobey	680	452	228
Dakar	450	300	150	Gaboon	750	500	270
Monrovia	500	334	166				

Return tickets may be bought at a reduction of 20 per cent. General cargo, 50 pesetas per 1,000 kilograms.

The distance from Barcelona to Fernando Po is 3,955 miles.

(5) *Morocco Line*.—The steamers assigned the Morocco Line are the *Mogador*, 500 tons and 350 horsepower; the *Rabat*, 800 tons and 600 horsepower, and the *Larache*, 1,500 tons and 700 horsepower.

The steamers make monthly trips, and the dates of their departure from Barcelona are: *Melilla*, the 20th; *Malaga*, the 21st; *Ceuta*, the 22d; *Cadiz*, the 26th; *Tangier*, the 26th; *Larache*, the 27th; *Rabat*, the 28th; *Casablanca*, the 30th; *Mazagan*, the 30th, and *Saffi*, the 31st.

On the return trips, steamers leave Mogador for Barcelona on the 2d of each month, touching at the same ports touched on the outward trips. The passenger rates on the Morocco Line are as follows, from Barcelona:

To—	First class.	Second class.	Third class.	To—	First class.	Second class.	Third class.
	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>		<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>
Tangier.....	85	70	40	Mazagan	110	80	50
Larache.....	90	70	45	Saffi	70	50	35
Rabat.....	95	70	45	Mogador.....	80	60	37
Casablanca	100	75	50				

Return tickets, 10 per cent reduction.

There are no established freight rates, as very little freight is carried by this line.

The distances from Barcelona are:

To—	Miles.	To—	Miles.
Melilla	440	Tangier.....	544
Mogador	869	Malaga	469
Cadiz	596		

(6) *Tangier Line*.—Only one steamer is assigned to the Tangier Line, viz, the *Joaquin del Pielago*, of 1,000 tons and 1,300 horsepower. This steamer leaves Cadiz Monday, Wednesday, and Friday of each week for Tangier, Algeciras, and Gibraltar, and returns on Tuesday, Thursday, and Saturday.

First-class tickets from Cadiz to Tangier vary from 27 to 55 pesetas; third-class tickets cost 12.50 pesetas; to Gibraltar, first class, from 35 to 75 pesetas; third class, 12.50 pesetas; to Algeciras, first class, from 40 to 75 pesetas; third class, 12.50 pesetas. From Tangier to Gibraltar and Algeciras, first class, from 15 to 40 pesetas; third class, 5 pesetas.

The freight rates are agreed upon by the company and shippers, there being no published tariffs.

The distance from Barcelona to Tangier is 544 miles.

The Pinillos-Saenz Line to Cuba and the United States employs five steamers:

Name.	Tons.	Name.	Tons.
Miguel M. Pinillos.....	4,000	Pio IX.....	5,500
Martin Saenz.....	5,300	Catalina.....	6,800
Conde Wilfredo.....	5,000		

They leave Barcelona once a month and touch at Valencia, Malaga, Cadiz, Canary Islands, Puerto Rico (Ponce, Mayaguez), Havana, Matanzas, Cienfuegos, Santiago de Cuba; and on their return voyages stop at New Orleans, Savannah, or New York. The round trip takes about three months.

The passenger rates to all American ports (except Porto Rican ports, which are 25 pesetas less) are: First class, 650 pesetas; second class, 450 pesetas, and third class, 175 pesetas.

The freight charges for all American ports are: Wine, 15 to 17½ pesetas per pipe; merchandise, 30 to 35 pesetas per ton or cubic meter.

From Cadiz to the Canary Islands the Pinillos-Saenz Company carries the Government mails free of charge.

The distances from Barcelona are:

To—	Miles.	To—	Miles.
Valencia.....	163	Havana.....	4,497
Malaga.....	469	New Orleans.....	5,056
Cadiz.....	596	Savannah.....	4,222
Las Palmas.....	1,212	New York.....	3,677
Puerto Rico.....	3,848		

F. Prats & Co. Line.—This company has five steamers, viz:

Name.	Tons.	Name.	Tons.
Juan Forgas.....	5,000	Berenguer el Grande.....	5,500
Puerto Rico.....	4,500	Gran Antilla.....	5,200
Miguel Gallart.....	5,500		

The steamers leave Barcelona every twenty days. They do not carry mails.

The passenger rates on the Prats Line from Barcelona are:

To—	First class.	Second class.	Third class.	To—	First class.	Second class.	Third class.
	<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>		<i>Pesetas.</i>	<i>Pesetas.</i>	<i>Pesetas.</i>
Puerto Rico.....	625	425	150	Cienfuegos.....	675	475	200
Ponce and Havana.	650	450	175	New Orleans.....	900	600	300

These steamers go to other ports in the United States if there is cargo. Freight rates are not fixed, owing to competition.

J. Jover y Serra Compañía has two steamers, viz:

Name.	Tons.	Nominal horse-power.	Name.	Tons.	Nominal horse-power.
J. Jover y Serra	3,528	600	Miguel Jover.....	3,506	600

They do not carry passengers or mails. There are no fixed dates of departure, nor fixed freight rates. They go to Puerto Rico, Cuba, and the United States.

Serra y La Flecha Line.—The steamers of this line, after calling at this port, leave Santander once every week for the principal ports of Cuba. They carry the mails. This line comprises fourteen steamers, viz:

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Alcía	4,500	300	Eduardo	3,500	300
Benita	2,500	150	Enrique	4,500	250
Carolina	3,500	300	Federico	3,500	250
Francisca	4,500	300	Guido	5,000	400
Leonora	4,500	300	Hugo	4,500	300
Serra	3,500	300	Pedro	5,000	400
Gracia	5,000	350	Ernesto	5,000	300

Passenger rates on these steamers are conventional for the first and second class passengers, and from 160 to 210 pesetas for third-class passengers. Freight rates are also conventional.

The distance from Santander to Havana is 4,066 miles.

Italian Line.—Steamers of the Società Riunite Florio e Rubattino Navigazione Generale Italiana, which run to Montevideo and Buenos Ayres are the *Sirio*, *Orione*, *Perseo*, and *Regina Margherita* (5,500 tons each). These steamers leave Genoa on the 1st and 15th of every month, call at Barcelona for cargo and passengers, and touch at San Vicente, Cape Verde, for coal. Two days are required for the trip from Genoa to Barcelona, and nineteen days from Barcelona to Montevideo. The distance from Genoa to Barcelona is 357 miles, and from Barcelona to Buenos Ayres 5,870 miles.

The passenger rates are 750, 500, and 175 pesetas for first, second, and third class, respectively. Passengers are booked for Talcahuano, Valparaiso, Caldera, Arios, and Callao, with transfer at Montevideo by steamer of the Pacific Steam Navigation Company.

The freight rates from Barcelona to Montevideo or Buenos Ayres are 22½ pesetas per cask of wine, and 44 pesetas for all other kinds of merchandise per cubic meter.

Knott's Prince Line.—This is an English line and has sixty steamers. On the 9th of every month a steamer leaves Liverpool and touches at Cadiz and Barcelona, and then proceeds to Trinidad, Colon, Progreso, Vera Cruz, and New Orleans. The steamers average from 1,800 to 2,000 tons each, and they do service all over the world. No special steamers are assigned to this line. Another steamer of the line leaves Barcelona

once a month, and proceeds, via Tarragona and Valencia, to Montevideo and Buenos Ayres. When there is sufficient cargo at Barcelona a steamer is detailed to transport it either to New York, the north of France, or the north of England. A steamer of this line leaves Charleston and another leaves New Orleans once a month laden with cotton for Barcelona.

The freight rates are 25 pesetas per ton to all places in Central America and Argentine Republic. Private arrangements may be made regarding cargoes to other parts of the world.

Compagnie Générale Transatlantique.—On the 13th of every month a steamer of this line leaves Marseilles for Barcelona, Malaga, Fort de France, Trinidad, La Guayra, Puerto Cabello, Cartagena, and Colon, where connection may be made with all the Pacific ports. The three steamers at present assigned to this service are the *Ferdinand de Lesseps*, 2,900 tons, 1,700 horsepower; *La Ville de Bordeaux*, 2,800 tons, 1,700 horsepower; *La Ville de Marseille*, 2,900 tons, 1,700 horsepower.

The freight rates are 27, 30, 40, 50, and 100 pesetas, according to the class of merchandise. The rate on a pipe of wine is 25 pesetas.

Passenger rates from Barcelona are 750, 400, and 225 francs for first, second, and third class, respectively.

The Compañía Higonésa.—The names of the steamers of this line are:

Name.	Tons.	Name.	Tons.
Asturias.....	673	Duro.....	2,080
Barambio.....	529	Cifuentes.....	721
Covadonga.....	474	Anselmo.....	783
Julian.....	445	America.....	521
Gijon.....	656		

One of these steamers leaves Barcelona every Wednesday for Tarragona, Valencia, Alicante, Cartagena, Agilas, Malaga, Cadiz, Vigo, Carril, Vilagarcia, Corunna, Ferrol, Ribadeo, Gijon, Santander, and Bilbao.

It takes twenty days to make the trip to Bilbao. No passengers are carried. Freight rates are made by private agreement. Another of these steamers leaves for Alicante, Cartagena, and Agilas on Saturday of each week.

The distances from Barcelona to the several places touched by the steamers of this line are:

To—	Miles.	To—	Miles.
Valencia.....	163	Vigo.....	1,039
Alicante.....	228	Corunna.....	1,140
Malaga.....	469	Santander.....	1,354
Cadiz.....	596	Bilbao.....	1,394

Vapores Correos Mallorquines.—This company has five mail steamers plying between Barcelona, Valencia, Alicante, and the Balearic Islands (Palma):

Name.	Tons.	Miles per hour.	Name.	Tons.	Miles per hour.
Belver	1,100	11	Lulio	450	12
Cataluña	1,100	10	Union	570	11
Isleño	600	11			

The passenger rates from Barcelona are 25, 15, and 8 pesetas for first, second, and third class, respectively.

The freight rates are from $7\frac{1}{2}$ to 50 pesetas per cubic meter, according to class of merchandise.

These steamers leave Barcelona on Monday and Thursday. They receive a small subvention from the Government.

The distance from Barcelona to Palma is 130 miles.

Compañía Menorquina.—The steamers of this line leave Barcelona every Wednesday for Port Mahon, and return every Sunday. They make the trip in from twelve to fourteen hours. The names of the steamers and their tonnage are:

Name.	Tons.	Name.	Tons.
Menorquin	545	Comercio	321
Ciudad de Mahon	540	Leon de Oro	278

They touch at Alcudia, where they connect with steamers for Palma. They carry the mails, and receive a subvention from the Government.

The passenger rates range from $7\frac{1}{2}$ to 25 pesetas for first class, from 5 to 15 pesetas for second class, and from 4 to 8 pesetas for third class.

The freight rates are conventional.

Vapores Sloman, jr., of Hamburg.—The steamers of this line are the following:

Name.	Tons.	Name.	Tons.
Barcelona	1,188	Palermo	845
Malaga	1,087	Gergenti	1,494
Marseille	1,390	Capri	888
Genoa	1,386	Lisabon	1,005
Livorno	1,087	Licata	1,494
Neapel	1,042	Trapani	1,007

These steamers leave Hamburg three or four times a month for Malaga, Barcelona, Genoa, Leghorn, Naples, Messina, and Palermo. From Hamburg to Barcelona the voyage lasts from ten to twelve days.

The freight rates between Barcelona and Hamburg are 20 pesetas per cubic meter, or 13 pesetas per 1,000 kilograms.

Passengers are carried only from Barcelona to Genoa, the rates being 61 pesetas with meals and 31 without meals.

Compañía Valenciana de Navegacion.—The steamers of this company are the following:

Name.	Tons.	Name.	Tons.
Denia.....	1,000	Sagunto.....	900
Graso.....	1,800	Vicente Sanz.....	555
Martos.....	1,800	Cervantes.....	412
Jativa.....	1,000		

The last two steamers leave Barcelona, the former on Saturdays and the latter on Wednesdays, for Valencia. The passenger rates are 15, 10, and 7½ pesetas for first, second, and third class, respectively. The other steamers leave Valencia on the afternoons of Tuesday and Saturday. Those that leave on Tuesday proceed to Marseilles, Cette, Barcelona, Valencia, Alicante, Malaga, Almeria, and those that leave on Saturday proceed to Cette, Leghorn, Genoa, Barcelona, and Valencia.

The distances from Barcelona to the several ports are:

To—	Miles.	To—	Miles.
Valencia.....	163	Marseilles.....	185
Malaga.....	469	Cette.....	148
Alicante.....	228		

Société Navale de l'Ouest.—The names of the steamers of this line, together with their tonnage, are:

Name.	Tons.	Name.	Tons.
St. André.....	612	St. Mathieu.....	553
St. Jean.....	571	St. Paul.....	678
St. Luc.....	474	St. Pierre.....	571
St. Marc.....	563		

A steamer of this line leaves Antwerp every ten days, and proceeds to Havre, Lisbon, Alicante, Valencia, Barcelona, Cette, and Marseilles. These steamers do not carry passengers. Freight rates are conventional.

Compañía Sevillana.—This line of steamers does not carry the mails, and is owned, like all the others herein named, by private individuals. The names and tonnage of the steamers are:

Name.	Tons.	Name.	Tons.
Segovia.....	800	La Giralda.....	1,800
Luis Cuadra.....	800	Asnalfarache.....	1,800
Lafitte.....	800	Sevillano.....	1,800
San Fernando.....	800	Ciervana.....	1,800
Torre del Oro.....	1,800	Macarcua.....	1,800

These steamers ply between the following ports: Marseilles, Cette, San Feliu de Guixols, Barcelona, Valencia, Alicante, Cartagena, Almeria, Malaga, Cadiz, Seville, Huelva, Vigo, Carril, Villagarcia, Corunna, Gijon, Santander, and Bilbao.

They leave Barcelona every Friday night for San Feliu de Guixols, Cette, and Marseilles, remaining at each of these ports one day. They leave Marseilles every Wednesday on their return trip, remaining in Barcelona two days and a half, then leaving every Sunday for Valencia and the other ports above named, entering every port at daybreak and leaving after sunset.

The passenger rates are: From Barcelona to San Feliu de Guixols, 12 pesetas; to Cette and to Marseilles, 25; to Valencia, 18; to Alicante, 20; to Cartagena, 25; to Almeria, 30; to Malaga, 36; to Cadiz, 42, and to Seville, 50.

Freight rates per 1,000 kilograms, 10, 15, and 25 pesetas for general merchandise; for flour, in bags, from one-half to 1 peseta per bag.

The distances from Barcelona to the several ports are:

To—	Miles.	To—	Miles.
Cette	148	Huelva	642
Marseilles	185	Vigo	1,039
Valencia	162	Carril	1,060
Alicante	228	Gijon	1,275
Almeria	377	Santander	1,354
Cadiz	596	Bilbao	1,394
Seville	660		

Vapores Espalin & Co.—The names and tonnages of the steamers composing the *Vapores Espalin & Co.* Line are:

Name.	Tons.	Name.	Tons.
Garcia Vinuesa	2,818	Nuevo Estremadura	2,800
Andalucia	3,000	Manuel Espalin	2,750
Nuevo Valencia	2,800		

These steamers leave for Cette and Marseilles every Wednesday, and for Valencia, Malaga, Cadiz, and Seville every Sunday. The passenger rates are as follows, meals not included:

To—	First class.	Second class.	Third class.	To—	First class.	Second class.	Third class.
Cette and Marseilles ..	<i>Pesetas.</i> 25	<i>Pesetas.</i> 20	<i>Pesetas.</i> 13	Malaga and Cadiz....	<i>Pesetas.</i> 50	<i>Pesetas.</i> 40	<i>Pesetas.</i> 25
Valencia	25	12.50	7.50	Seville	60	45	30

The freight rates to Cette and Marseilles are 15 francs; to Valencia, 12 pesetas, and to Malaga and Cadiz, 25 pesetas per ton.

The distances from Barcelona to the several ports are:

To—	Miles.	To—	Miles.
Cette	148	Malaga	489
Marseilles	185	Cadiz	596
Valencia	162	Seville	660

Ybarra & Co.—The steamers of this line ply between Bilbao, Seville, Barcelona, Marseilles, and the intermediate ports.

Name.	Tons.	Name.	Tons.
Cabo San Vincente	2,300	Cabo San Sebastian	2,300
Cabo San Antonio	2,300	Itálica	1,400
Cabo Quejo	2,300	Cabo Prior	1,200
Cabo Peñas	2,300	Cabo Silleiro	1,200
Cabo Palos	2,300	La Cartuja	1,160
Cabo Trafalgar	2,300	Vizcaya	1,100
Cabo Creux	2,300	Triana	1,000
Cabo Ortegal	2,300	Ibaizabal	1,000
Cabo Roca	2,300	Luchana	550
Cabo Nao	2,300	Cabo Santa Maria	200
Cabo Tortosa	2,300		

The steamers leave Bilbao twice a week, and carry passengers and freight. The passenger rates from Barcelona are as follows:

To—	First class.	Third class.	To—	First class.	Third class.
	<i>Pesetas.</i>	<i>Pesetas.</i>		<i>Pesetas.</i>	<i>Pesetas.</i>
Tarragona	12.50	5	Almeria	30	17.50
Valencia	15	7.50	Corunna	50	25
Alicante	15	7.50	Ferrol	45	25
Cartagena	25	12.50	Santander and Bilbao	45	25
Malaga	40	20	Palanos	15	7.50
Cadiz	50	25	San Felix de Guixols	15	7.50
Huelva	50	25	Cette	20	10
Vigo and Carril	50	25	Marseilles	25	13

The freight rates from Barcelona to Cete are 10 pesetas per ton, and 4.50 pesetas per cask of wine; to Marseilles, 10 pesetas per ton, and 5.50 pesetas per cask of wine.

The trip to Cete lasts ten hours and to Marseilles eighteen hours.

The distances from Barcelona are:

To—	Miles.	To—	Miles.
Valencia	163	Cadiz	596
Alicante	228	Bilbao	1,394
Tarragona	51	Seville	660
Marseilles	185		

Vapores de Tintoré y Cia.—The steamers of this line are:

Name.	Tons.	Miles per hour.	Name.	Tons.	Miles per hour.
Ter	598	9½	Tintoré	807	10½
Francoli	806	10	Turia	937	11

The steamers run between Spain and England, but not on any fixed days. They leave Liverpool every week for Ferrol, Corunna, Corcubion, Riviera, Muros, Marin, Vigo, Huelva, Cadiz, Malaga, Adra, Almeria, Aguilas, Cartagena, Alicante, Valencia, Burridna, Castellon, Tarragona, and Barcelona. They carry passengers and freight, but the rates are not published.

The distances from Barcelona are:

To—	Miles.	To—	Miles.
Malaga.....	489	Valencia.....	163
Cadiz.....	596	Tarragona.....	51
Cartagena.....	285	Corunna.....	1,140

The distance from Corunna to Liverpool is 694 miles.

Compañía Bandera Española.—The steamers of this line, after taking passengers and freight from Barcelona, leave Santander every fifteen days for Havana:

Name.	Net tons.	Horse-power.	Name.	Net tons.	Horse-power.
Castellano.....	1,022	200	Madrileño.....	2,024	250
Catalan.....	1,022	200	Murciano.....	1,527	400
Euskaro.....	1,613	250	Navarro.....	2,564	350
Gaditana.....	1,797	400	Palentino.....	1,562	250
Gallego.....	1,716	350	Santanderino.....	2,017	420

Passenger rates to Havana, 500, 250, and 160 pesetas, for first class, second class, and third class, respectively.

The freight rates are conventional.

The distance from Barcelona to Santander is 1,354 miles, and from Santander to Havana, 4,093 miles.

Larrinaga & Co.—The steamers of this line take cargoes of miscellaneous merchandise to Cuba and bring back sugar at conventional rates. They also carry iron ore from Bilbao to England. They have no fixed time for sailing, nor do they carry passengers.

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Alava.....	1,448	250	Niceto.....	1,830	275
Buena Ventura.....	1,155	200	Ramon de Larrinaga.....	2,010	320
Emiliano.....	1,427	280	Saturnina.....	1,826	275

The distances are: From Barcelona to Havana, 4,497 miles; Havana to Santander, 4,066 miles; Santander to Liverpool, 683 miles.

United Steamship Company.—This line has a fleet of 112 steamers, and it takes goods at through rates to the principal ports of Denmark, Russia, Germany, Sweden, Norway, England, Belgium, France, Portugal, Spain, and Greece. Its main office is at Copenhagen. These steamers also carry passengers. The fare from Copenhagen to Barcelona, or vice versa, is \$40, first class, and 80 cents a day for meals.

The agent for this line in Barcelona has been recently appointed and is not able to give any particulars about freight rates or tonnage.

The distances from Barcelona to the several ports are as follows, in miles: To Copenhagen, 2,560; to Hamburg, 2,251; to Antwerp, 1,892.

La Veloce: Navigazione Italiana.—This company, which has its head offices at Genoa, has two lines of steamers which touch at Barcelona for passengers and freight. The first line consists of the steamers (1) *Duca di Galliera*, which runs from Barcelona to Las Palmas, Rio Janeiro, Montevideo, and Buenos Ayres; (2) *Vittoria*, to Las Palmas, Montevideo, and Buenos Ayres; (3) *Duchessa di Genova*, to Las Palmas, Montevideo, and Buenos Ayres. They sail from Genoa on the 3d of every month.

The passenger rates are 750 to 1,000 lire, first class, 550 lire, second class, and 173 lire, third class. Return tickets at reduced rates.

The freight rates are 20 to 30 pesetas per pipe of wine, and 40 pesetas per cubic meter.

This line of steamers carries the mails from Genoa, and has eight other steamers which leave Genoa at regular intervals for Las Palmas, St. Vincent, Pernambuco, Bahia, Montevideo, Rio Janeiro, and Santos, and connections may be made with the ports of the Pacific, Rio de la Plata, Uruguay, Paraguay, and the coast of Brazil.

The second line of the La Veloce Company consists of the steamers *Città di Genova* and *Rio Janeiro*. They leave Genoa the 1st of each month, and proceed to Barcelona, Santa Cruz, La Guayra, Puerto Cabello, Curacao, Cartagena, Maracaibo, and Colon, where connections may be made with the Pacific Mail Steamship Company for the ports of the Pacific.

Passenger rates: From Genoa to Barcelona, 50 francs first and second class, and 35 francs third class; Genoa to Santa Cruz, 175 francs first class, and 100 francs third class; Genoa to Colon, 400 francs first class, and 200 francs third class. Return tickets may be obtained at 20 per cent reduction.

The freight rates are 20 to 30 pesetas for a pipe of wine, and 40 pesetas per cubic meter.

The distance from Barcelona to Genoa is 357 miles.

This line carries the mails from Genoa.

Hamburg-American Line.—This line is, indirectly, one of the most valuable lines to Spain. The steamers calling at Gibraltar and Genoa are the following:

Name.	Tons.	Horse-power.	Name.	Tons.	Horse-power.
Werra.....	4,814	6,300	Spree.....	6,963	13,000
Fulda.....	4,814	6,300	Normannia.....	8,716	16,000
Kaiser Wilhelm.....	6,991	6,500	Columbia.....	7,578	13,000

Many American passengers leave these steamers at Gibraltar and travel through Spain, or, after traveling through Spain, meet them at

Gibraltar and proceed on them homeward. Probably within a few years all the great Atlantic passenger lines will detail steamers to convey passengers directly to the great Mediterranean ports, and we may, therefore, expect our trade to increase, and especially with Spain, which refuses to be drawn into "entangling alliances" with the other powers of Europe, and will not be slow to see the advantages that will accrue to her if she can establish close commercial relations with the United States, which is the only other great power that always avoids entangling alliances, and that, consequently, can with the most sincerity offer or reciprocate permanent friendship.

Miscellaneous steamers.—Besides all the steamers heretofore named, there are many coal steamers that come to Barcelona, more or less regularly, from England and Italy, and many "tramp" steamers that bring wheat from Russia, codfish from Norway, and wood, cotton, and petroleum from the United States.

RAILWAYS.

There are three lines of railway connecting Barcelona with other European cities: (1) Tarragona, Barcelona and Frontier of France Railway; (2) Barcelona and Saragossa Railway, and (3) Barcelona, Reus and Saragossa Railway (new line). These three lines are owned by private corporations, but they receive a subvention from the Spanish Government on condition that they carry the mails. They are each single track, broad gauge. The cars of Spanish and French railways can not, therefore, pass into each other's territory.

The first railway in Spain was built in 1848, between Barcelona and Mataro, a distance of 20 miles. From that time until 1890, 9,775 kilometers (6,074 miles) of railway were opened to the public.

Tarragona, Barcelona and Frontier of France Railway.—The route of this railway follows the sea closely and is very picturesque. The distance from Barcelona to Tarragona is 63 miles, and from Barcelona to Port Bon 103 miles. No great natural difficulties have been overcome in the construction of this line.

Passenger rates from Barcelona to Tarragona are 12.21, 9.51, and 6.11 pesetas, for first class, second class, and third class, respectively.

There are five passenger trains daily to Tarragona, one of which is an express that covers the distance in two hours and thirty-eight minutes. The other four trains cover the distance in from three to four hours. To Port Bon, on the frontier, there are two trains daily, and on Monday, Wednesday, and Saturday an additional train for first-class passengers, which leaves Barcelona at 6 p. m. and makes the journey in four hours, while the other trains take from five to six hours. At the French frontier connections are made with trains for Bordeaux, Paris, and Marseilles. A curious fact is that the express trains from Barcelona do not carry the mails, either on this or on the Saragossa line.

The passenger rates from Barcelona to Port Bon are 22.15, 16.77, and 10.71 pesetas, for first class, second class, and third class, respectively.

Barcelona and Saragossa Railway.—There are three express trains every week, one mail, and one mixed train every day, and an average of three freight trains every day from Barcelona to Saragossa, the distance between the two cities being 219 miles. From Saragossa to Madrid the distance is 221 miles, making the entire distance from Barcelona to Madrid 440 miles. Heretofore this has been the shortest line to Madrid, and the time occupied in making the journey on the express train was twenty hours and thirty-six minutes, but on the 1st of July, a new line, hereinafter described, will be opened, and the time will be shortened by about five hours.

Freight rates per 1,000 kilograms per kilometer (0.6214 mile) are: Express (*grande vitesse*), first class, 65 centavos;¹ second class, 42 centavos; third class, 35 centavos; fourth class, 31½ centavos, and fifth class, 25 centavos. Freight train (*petite vitesse*), first class, 32 centavos; second class, 21 centavos; third class, 17½ centavos; fourth class, 15¼ centavos, and fifth class, 12½ centavos.

The average passenger rates per kilometer (0.6214 mile) between intermediate points are as follows: Slow trains, 10, 7½, and 4½ centavos for first, second, and third class, respectively, and 12, 8½, and 4½ centavos on fast trains.

From Barcelona to Saragossa the rates are 42.10, 31.10, and 23.16 pesetas for first, second, and third class, respectively, and from Barcelona to Madrid, 81.90, 62.45, and 42.10 pesetas.

Return tickets can be procured at greatly reduced rates.

At Monistrol, a station on this line, passengers alight who desire to ascend to the Monastery of Montserrat, which is situated about half-way up the mountain of the same name. The distance from Barcelona to Monistrol is 31½ miles, and of the three trains that go there daily, only one succeeds in covering it in two hours. The distance from Monistrol to the monastery is 4½ miles, and the time required to cover it is just one hour. The trains that make this ascent are modeled after those used on the Rigi, and they have proved very satisfactory. The line was opened two years ago. About 80,000 persons visit Montserrat every year, and it is undoubtedly one of the most interesting and delightful of European excursions.

Barcelona, Reus and Saragossa Railway.—This new line to Saragossa was opened on the 1st of July, 1894. It was constructed by the Taragona, Barcelona and Frontier of France Railway Company and connected two branches of their line already in operation—that from Barcelona to Reus and that from Saragossa to Puebla de Híjar, thus making a through line from Barcelona to Saragossa. The distance from Barcelona to Reus is 106 kilometers (66.7 miles), and from Reus to Saragossa, 235 kilometers (146.4 miles). The number of tunnels on

¹100 centavos = 1 peseta; 1 peseta = 19.3 cents.

this line is 76, the total length of which is 22 kilometers (13.6 miles). The longest tunnel is 4,000 meters (13,123 feet), and the shortest is 20 meters (65.4 feet). The bridges number 27, and are between 20 and 300 meters (65.42 to 984 feet) long and 5 to 30 meters (16.4 to 98.4 feet) high. There are also 10 viaducts, of from 100 to 250 meters (328 to 820.2 feet) long and from 20 to 40 meters (65.4 to 131.2 feet) high. There are in all 16 stations on the line. The passenger and freight rates have not yet been announced or arranged. The express trains leave Madrid for Barcelona on Mondays, Wednesdays, and Fridays at 5.30 p. m., and will arrive at Barcelona the following morning at 11.13; returning from Barcelona on Tuesdays, Thursdays, and Saturdays at 6.31, and arriving at Madrid at 11.45 the following morning. There are sleeping and dining cars on these trains.

The distances from Barcelona are: To Tarragona, 63 miles; to Valencia, 234; to Saragossa, 219; to Madrid, 440; to Lisbon, 987; to Gerona, 61; and to Port-Bon, 63 miles.

As there are few competitive lines of railway in Spain, the freight rates are very high—in fact one commonly hears the statement made that it costs more to bring goods to Barcelona from Saragossa than it does from England. Our American exporters, therefore, can not hope to do much trade with the interior of Spain. The high rates for freight and the slowness of the trains account for the lack of development of the interior, and for much of the poverty of the people.

HIGHWAYS.

In Spain, country roads or highways are either national or provincial. The national roads are paid for by the nation and the provincial are constructed under the management of the provincial committees, who spend no fixed sum during any term of years, but such sums as, from time to time, their work requires. The national roads are good, but the provincial roads vary. Those in the wealthier provinces are equal to the national roads, while those in the poorer provinces are not infrequently execrable. The material used is principally small, hard stone, sometimes granite, sometimes limestone, and sometimes sandstone, and the system of construction is always that conceived by Macadam. The cost of construction depends on the kind of stone used and on the distance it is drawn, but it never rises above 32 cents nor falls below 21 cents per square meter (10.7642 square feet) for an average thickness of 20 centimeters (16 inches). As the Province of Barcelona is the wealthiest in Spain, its roads are among the best, but there is still room for improvement. They do not yet compare favorably with the roads of France, Switzerland, Germany, or England.

The most important highway that traverses the Province of Barcelona is that from Madrid to France, by way of La Junquera. This was built in the early part of the century and varies in width between 10 and 20 meters (32.7 and 66.6 feet). Its total length, from Madrid to

Barcelona, is 626 kilometers (389 miles), 93.187 kilometers (57.9 miles) being in the Province of Barcelona. This is a highway of the first class.

The highway from Tarragona to Barcelona, 40.737 kilometers (25.4 miles) in length, in the Province of Barcelona; that from Manresa to Gerona, of which 47.108 kilometers (29.8 miles) are already constructed in the Province of Barcelona, and 31.57 kilometers (19.6 miles) remain to be constructed; and that from Barcelona to Ribas, of which 95 kilometers (59 miles) are in the Province of Barcelona, belong to the second class. Their width varies from 8 to 16 meters (26.2 to 63 feet).

There are many roads of the third class, but they are unimportant, except locally.

As freight rates are so high in Spain people who move their household goods not infrequently convey them even to such distant points as Madrid and Paris in large furniture vans.

As a rule, the highways in this province are lined with plane trees of tender years and are only occasionally favored with rain, so they are used for business rather than for pleasure.

HERBERT W. BOWEN, *Consul*.

HENRY W. MARTIN, *Vice-Consul*.

SPANISH STEAM MARINE.

In point of tonnage, Spain ranks seventh among the mercantile marine of the world, with 760 vessels above 100 tons net, steam and sail, of a total tonnage of 547,358. The coast of Spain is remarkable for the number of its fine natural harbors, which have conduced in a high degree to the development of the foreign trade of the Kingdom.

The following is a list, with some particulars, of the steam fleets of Spain:

Compañía Transatlántica (Barcelona and Cadiz).—Thirty-two steamers; trade with Puerto Rico, Cuba, Mexico, New York, Liverpool, Philippine Islands, River Plate, and Africa; gross tonnage of fleet, 100,000; subsidized by the Spanish Government for the conveyance of mail.

Pinillos, Saenz & Co. (Cadiz).—Five steamers; run to Puerto Rico, Cuba, Mexico, and the United States; these vessels are of large tonnage and maintain a sea speed of 12 knots.

F. Prats & Co. (Barcelona).—Five steamers, 2,000 tons each; same itinerary as the Pinillos, Saenz & Co. Line.

M. M. de Aarrotegui (Bilbao).—Seven steamers; same itinerary as the two preceding lines. Freight boats.

Compañía de Navegacion La Flecha (Bilbao).—Seven steamers; itinerary, to Liverpool and then the same as the three preceding lines. Freight boats.

Hijo de J. Jover y Serra (Barcelona).—One steamer, 2,000 tons; itinerary, Spain, Puerto Rico, and Cuba.

J. Jover y Costa.—One steamer 2,000 tons; itinerary, Spain to Puerto Rico and Cuba.

Sociedad de Navegacion é Industria (Barcelona).—Four steamers; itinerary, Spain to Canary Islands.

La Betica Empresa de Navegacion á Vapor (Seville).—Twelve steamers; itinerary, Spain to England and Germany. Freight boats.

Compañía Marítima (Barcelona).—Eighteen steamers; itinerary, England and Spanish coasting trade. Freight boats. This and preceding line belong to Macandrew & Co., of London.

P. M. Tintore & Co. (Barcelona).—Four steamers; itinerary, Spain and England. Freight boats.

Compañía Bilbaina de Navegacion (Bilbao).—Six steamers; itinerary, Bilbao to England. Mineral boats.

J. M. Martinez de las Rivas (Bilbao).—Three steamers; itinerary, Bilbao to England. Mineral boats.

Sons of Thomas Haynes (Cadiz).—Eight steamers; itinerary, Spain to North Africa. Freight boats.

Sociedad Isleña Marítima (La Palma and Majorca).—Five steamers; itinerary, Barcelona and Balearic Islands.

Sociedad Mahonesa de Vapores (Mahon).—Three steamers; itinerary, Barcelona to Balearic Islands.

Ybarro & Co. (Seville).—Twenty-one steamers. Coasting trade.

Olavarria, Loza & Co. (Gijon).—Five steamers. Coasting trade.

Meliton, Gonzalez & Co. (Gijon).—Five steamers. Coasting trade.

España & Co. (Seville).—Five steamers. Coasting trade.

Compañía Valenciana de Navegacion (Valencia).—Five steamers. Coasting trade.

Among Spanish steamship lines, the *Compañía Transatlántica* stands preeminent. Twenty steamers of this line maintain a service speed of 12 knots or over, while the latest additions average 14½ to 15 knots. These fast boats are fitted up as armed cruisers, as the company is under contract for the transportation of all official passengers, troops, and stores. It should be noted to their credit that the mail service is performed with marked regularity.

CHAS. L. ADAMS,

Consul.

CADIZ, March 5, 1895.

GIBRALTAR.

RAILWAYS.

Gibraltar has no direct railway communication with the Continent of Europe, but it is in close connection with Algeciras, a Spanish seaport town situated on the opposite side of the Bay of Gibraltar, at a distance by sea of 5 miles, or 10 miles by land, where a railway has recently been opened for public passengers and freight traffic under the Spanish railroad laws and requirements.

This railroad starts from the Algeciras pier station on the coast, opposite Gibraltar, and terminates at Bobadilla, where it makes connection with the Andalusian railways, thereby opening up direct communication by rail with Spain, France, and other European countries.

The line to Bobadilla Junction from Algeciras is about 110 miles long. It is in the hands of an English company whose headquarters are in London.

The daily service of the line, which has only one track, consists of six passenger trains—two through and four local trains. There are twenty-two stations on the road between Algeciras and Bobadilla.

The line passes through a rich country of vineyards, orchards, cork-wood, etc., and the scenery throughout is as charming as it is varied. It is in good working order, but on about one-third of the route from Algeciras toward Rondo, owing to the nature of the soil, which becomes boggy during heavy rains, near the side of hills, landslips sometimes occur, which cause a slight interruption in the through traffic. Measures, however, are constantly being taken to obviate this transitory difficulty by laying down many tons of stone to form a firmer foundation wherever required.

By this railway route, the distance between London and Gibraltar can now be covered under three days.

Correspondence for almost all parts of the world is forwarded daily by this route. The mails are conveyed to and brought over from Algeciras by a steam launch employed for that purpose by the British post-office; besides, steamers under the Spanish flag are constantly running between both ports in connection with the trains daily departing from and arriving at the Algeciras pier station, for the accommodation of passengers, luggage, and traffic in general.

This railway route is daily increasing in popularity among travelers in general, and especially with the numerous tourists who are continually arriving at Gibraltar direct from New York by the North German Lloyd steamships, and desire to visit Morocco and the southern parts of Europe, Palestine, and Egypt before proceeding to the northern cities of Europe.

OCEAN LINES.

The North German Lloyd Steamship Company, with its headquarters at Bremen, has a fortnightly line of steamers plying between New York, Genoa, and Naples, calling at Gibraltar to land and embark passengers on their outward and inward trips.

The following are their names: *Kaiser Wilhelm II*, of 6,991 gross tons and 6,500 horsepower; *Spree*, 6,963 gross tons and 12,500 horsepower; *Fulda*, 4,814 gross tons and 6,300 horsepower, and the *Werra*, 4,814 gross tons and 6,300 horsepower.

The time of passage consumed by these steamships is about eight and one-half days from New York to Gibraltar, and eleven days to Genoa or Naples. They offer excellent accommodations for first and second cabin passengers, and have spacious room for a large number of steerage passengers or emigrants.

This company has three other steamships in the same service, but they are principally engaged in conveying freight and carrying steerage passengers. The names of these steamships are: *Kron Prinz Frederick Wilhelm*, of 2,395 tons gross and 1,150 horsepower; *Weser*, of 2,823 tons gross and 1,300 horsepower, and the *Neckar*, of 3,250 tons gross and 3,250 horsepower.

The accommodation for first cabin passengers by these steamships does not equal that of the other steamships belonging to the same company mentioned above; besides, they generally consume twelve days in the voyage from New York to this port.

The Hamburg-American Steamship Company also runs, bimonthly, one of the following steamships between New York and Naples, calling at Gibraltar: *Suevia*, of 3,609 tons gross; *Wieland*, of 3,502 tons gross, and the *Gellert*, of 3,533 tons gross.

Service of different lines.—Among the advantages which these German steamships afford passengers and shippers of cargo, are punctuality in their departures and arrivals at each port and quick passage across the ocean, being quite an improvement over the services of the long-established British Anchor Line, and the Italian Florio and Rubattino companies, whose steamships still continue running on similar voyages, though they have lost much of the patronage formerly enjoyed.

During the year 1893, the North German Lloyd steamships which called at this port from Italian ports on their way to the United States carried 18,390 passengers, chiefly emigrants; the British Anchor Line steamships, 14,622 passengers, and the Italian Florio and Rubattino steamships, 7,914 passengers.

HORATIO I. SPRAGUE,
Consul.

GIBRALTAR, May 20, 1895.

GERMANY.

EXPLANATORY REPORT.

I have the honor to report concerning Highways of Commerce, circular of instructions in regard to which reached me March 2, 1895. Answer has been delayed until to-day in order to send the quarterly issue of Statistik des Deutschen Reichs, just published, which contains the figures for the seaport commerce of Germany for the year 1893.

The circular of instruction dates back to the spring of 1894, but was not answered owing to the confusion in the office after the death of Consul-General Edwards. No copy of the circular was found by me in the archives.

I note that the principal consular officers have replied to the circular and in view of the trouble which repetitions would give, would respectfully suggest that I be informed what has been covered by their reports, in order that, to the best of my ability, I may fill any gaps left by them.

Meantime, I have the honor to forward a very complete railway map of Germany, just issued here by Prof. W. Liebenow, which contains the latest information on the subject.¹ I also send a compilation of the more important statistics of the railways of Germany for 1893 (*Uebersichtliche Zusammen-Stellung der wichtigsten Angaben der deutschen Eisenbahn-Statistik*) which is an official publication containing maps as well as text. This appeared last year. A fourth inclosure covers the movement of vessels on inland waters in Germany during 1893 (*Die Binnen-Schifffahrt im Jahre 1893: Berlin, 1895*), which is a Government publication.

Trusting that these publications will be of use to those interested, and hoping to receive more specific instructions in accordance with the suggestion above,

I am, etc.,

CHARLES DE KAY,
Consul-General.

BERLIN, *June 13, 1895.*

The above report was received by the Department on the 28th of June, and as the matter for "Highways of Commerce" was already in the hands of the printer, it was impossible to wait until a reply could be obtained from Consul-General De Kay to the additional instructions asked for. The German publications have been utilized so far as practicable in the preparation of the following reports.

¹ Filed in Bureau of Statistics, Department of State.

OCEAN LINES.

The following table from the official publication transmitted by Consul-General De Kay shows the number of vessels, with registered tonnage, belonging to the different States of the German Empire having seaports, and the cities of Hamburg and Bremen:

German vessels plying between German countries.

Districts.	Prussia.		Mecklenburg-Schwerin.		Oldenburg.	
	Ves-sels.	Registered tons.	Ves-sels.	Registered tons.	Ves-sels.	Registered tons.
Arrived and departed from—						
The Prussian Baltic district.....	19,628	1,889,503	430	37,732	122	11,074
The Prussian North Sea district.....	38,807	1,516,903	41	1,548	2,499	54,728
Mecklenburg-Schwerin.....	447	41,196	277	6,400	11	520
Oldenburg.....	3,237	88,582	10	1,083	922	20,171
Lubeck.....	1,338	123,068	193	6,277		
Bremen.....	1,805	156,254	41	2,024	101	2,421
Hamburg.....	1,761	369,463	9	331	219	18,563
Total.....	66,823	4,184,969	1,001	55,345	3,874	107,477
Arrived in and sailed from—						
Baltic district, 1893.....	21,413	2,053,767	900	50,409	133	11,594
1889.....	24,338	1,896,679	810	59,348	81	7,123
North Sea district, 1893.....	45,410	2,131,202	101	4,936	3,741	95,883
1889.....	38,897	1,266,684	65	3,334	3,072	74,859

Districts	Lubeck.		Bremen.		Hamburg.		German Empire.	
	Ves-sels.	Registered tons.	Ves-sels.	Registered tons.	Ves-sels.	Registered tons.	Ves-sels.	Registered tons.
Arrived and departed from—								
The Prussian Baltic district.....	1,329	126,639	364	70,342	444	94,794	22,317	2,230,064
The Prussian North Sea district.....			1,380	94,511	1,542	304,045	44,069	1,971,735
Mecklenburg-Schwerin.....	157	4,995	42	2,132	11	870	945	56,113
Oldenburg.....			176	4,445	279	29,101	4,624	143,332
Lubeck.....	2	63	2	182			1,533	129,527
Bremen.....	1	1,787	1,290	293,496	1,274	302,731	3,223	463,493
Hamburg.....							3,280	683,640
Total.....	1,489	133,484	3,254	465,108	3,550	731,541	79,991	5,677,924
Arrived in and sailed from—								
Baltic district, 1893.....	1,486	131,634	408	72,656	455	95,664	24,795	2,415,724
1889.....	1,299	97,390	280	32,324	427	74,560	27,235	2,167,424
North Sea district, 1893.....	3	1,850	2,845	392,452	3,095	635,877	55,196	3,262,200
1889.....	1	35	1,931	227,515	1,513	255,604	45,479	1,828,031

German vessels arriving in and sailing from German ports.

Countries of origin and destination.	Arrived.				Sailed.			
	1898.		1889.		1898.		1889.	
	Vessels (voy-ages).	Regis-tered tons	Vessels (voy-ages).	Regis-tered tons.	Vessels (voy-ages).	Regis-tered tons.	Vessels (voy-ages).	Regis-tered tons.
European Russia:								
On the White Sea and Arctic Ocean		5 2,596	7	3,228	6	2,609	6	2,519
On the Baltic	400	156,847	785	287,696	641	307,444	1,086	474,498
Sweden	1,307	215,840	1,111	146,952	1,104	274,624	881	177,172
Norway, with Spitzbergen	173	19,819	232	21,537	213	41,749	233	30,335
Denmark, with Iceland and Faroe Islands	2,030	278,223	2,120	244,322	2,343	291,922	2,256	227,990
Great Britain and Ireland	2,718	1,295,107	3,174	1,505,762	2,345	1,143,738	2,739	1,271,968
Netherlands	252	73,872	413	79,001	357	147,065	450	112,406
Belgium	200	117,417	216	118,907	158	86,561	207	106,356
France	106	68,471	117	62,111	184	88,926	129	62,935
Spain, with Gibraltar and Portugal, including the Azores	121	73,005	104	53,523	83	46,300	99	45,696
Italy and Malta	53	73,162	41	43,230	46	49,544	38	40,686
Austria-Hungary	18	21,440	13	10,696	19	20,418	17	14,996
European Turkey and Greece	31	42,431	2	1,958	34	43,028	1	41
Roumania and Russia on the Black Sea	21	24,936	17	17,996	11	13,165	15	16,586
Not specified			6	47	7	222	16	810
British North America on the Atlantic, including Greenland	26	54,159	16	25,052	30	60,677	21	30,554
United States of America on the Atlantic	488	1,210,555	495	975,659	501	1,250,615	467	967,525
Mexico and Central America on the Atlantic	33	38,777	37	29,852	31	45,330	34	34,674
West India Islands	72	92,085	60	67,854	59	86,051	53	74,394
South America on the Atlantic, north of Brazil	8	5,068	6	2,063	11	3,041	25	7,179
Brazil	99	151,906	126	193,436	131	164,412	159	205,864
South America on the Atlantic, south of Brazil	96	159,969	42	74,131	92	153,081	63	101,220
Chile and other South American countries on the Pacific	111	171,059	129	137,529	78	126,192	85	102,689
Mexico and Central America on the Pacific	7	4,212	10	5,295	8	6,505	11	5,079
United States of America and British America on the Pacific	1	960	2	1,729			2	1,906
Africa on the Mediterranean Sea	3	2,387	1	753				
Cape Colony, with Natal	2	2,019			6	5,489	3	997
Africa on the Atlantic, including the German Protectorate	b 67	69,930	c 38	39,141	d 69	71,815	e 44	45,033
Africa on the Indian Ocean and Red Sea, including the German Protectorate	f 16	25,690	7	3,002	g 18	24,664	8	5,790
Asia on the Mediterranean and Black seas	5	5,617	2	323	3	3,509	4	593
Asia and the East Indies, with the Indian Islands	78	147,432	49	65,434	56	112,889	23	35,062
China, Japan, and Eastern Asia	41	88,483	39	70,243	47	97,908	45	73,909
Australia and Pacific Ocean islands, including German Protectorate	28	64,292	h 17	26,323	i 35	72,250	48	68,408

a In the figures for 1889 the traffic with Heligoland, which island was then owned by Great Britain, is included (186 vessels of 38,283 registered tons arrived from there, and 199 vessels of 36,989 registered tons sailed thither). b Of this number 2 were vessels of 1,304 registered tons, which arrived from ports of the German protectorates in Africa in the Atlantic Ocean. c Of these 1 was a vessel of 1,286 registered tons, which arrived from ports of the German protectorates in Africa in the Atlantic Ocean. d Of these 1 was a vessel of 1,079 registered tons, which sailed to ports of the German protectorates in Africa in the Atlantic Ocean. e Of these 3 were vessels of 2,614 registered tons, which sailed to ports of the German protectorates in Africa in the Atlantic Ocean. f Among these were 13 vessels of 24,056 registered tons, which arrived from ports of the German protectorates in Africa in the Indian Ocean. g Among these were 12 vessels of 22,271 registered tons, which sailed to ports of the German protectorates in Africa in the Indian Ocean. h Among these were 2 vessels of 883 registered tons, which arrived from ports of the German protectorates in New Guinea and the islands of the Pacific Ocean. i Among these was 1 vessel of 410 registered tons, which sailed to ports of the German protectorates in New Guinea and the islands of the Pacific Ocean.

Vessels to or from German ports.

Year.	Arrived from—				Sailed to—			
	Europe, exclusive of Germany.		Countries not in Europe.		Europe, exclusive of Germany.		Countries not in Europe.	
	Vessels (voyages).	Registered tons.	Vessels (voyages).	Registered tons.	Vessels (voyages).	Registered tons.	Vessels (voyages).	Registered tons.
1893.....	7,435	2,462,735	1,181	2,294,620	7,551	2,557,405	1,175	2,284,408
1889.....	8,358	2,594,956	1,076	1,717,819	8,175	2,585,992	1,095	1,760,876

PORTS OF THE GERMAN EMPIRE.

According to the Statesman's Year Book for 1895, the shipping at the seven principal ports of the German Empire in 1892 was as follows:

Ports.	Number.	Tonnage.	Ports.	Number.	Tonnage.
Hamburg: <i>a</i>			Lubeck: <i>c</i>		
Entered.....	8,829	5,683,353	Entered.....	2,425	516,963
Cleared.....	9,067	5,742,821	Cleared.....	2,427	524,236
Stettin:			Neufahrwasser (Dantsig):		
Entered.....	3,762	1,233,541	Entered.....	1,582	584,478
Cleared.....	3,700	1,230,486	Cleared.....	1,576	577,098
Bremen: <i>b</i>			Konigsberg:		
Entered.....	3,095	1,358,191	Entered.....	1,330	397,556
Cleared.....	3,060	1,350,855	Cleared.....	1,397	426,448
Kiel:					
Entered.....	3,611	591,680			
Cleared.....	3,634	580,726			

a Including Cuxhaven.*b* Including Bremerhaven and Vegesack.*c* Including Travemunde.

OCEAN MAIL STEAMERS.

In the annual report of the United States Commissioner of Navigation for 1894, under the heading, "Ocean Mail Compensation and Subsidies," pp. 99, 100, the following information as to the steamship lines of Germany is given:

Less than 4 per cent of the net tonnage of Germany's merchant marine receives direct subsidies from the imperial treasury for carrying the mails. The German merchant marine for 1893 comprised 3,728 vessels of 1,511,579 register (net) tons. Nineteen steamships of 51,800 register tons received direct postal subsidies to the amount of 4,990,000 marks (mark = 23.8 cents), in round numbers \$1,240,000. The distance traversed was 999,622 miles, making the average payment per mile \$1.25. In response to the inquiry of this Bureau, through the proper official channels, the German imperial foreign office has furnished the following statement of details of the operations of the German postal subsidy law in force April, 1894:

Contracting company.	Routes.	Trips per annum.	Miles per annum.	Number and register (net) tonnage each of steamers required.	Speed.	Subsidy.
North German Lloyd.	1. Bremerhaven-Shanghai ..	13	300,534	5 at least 4,500 register tons.	<i>Knots.</i> 12	} 4,090,000
	2. Hongkong-Yokohama ...	13	44,096	1 at least 1,500 register tons. <i>a</i>	11½	
	3. Singapore-New Guinea ...	6	48,327	.....do.....	9
	4. Bremerhaven-Sydney.....	13	340,730	5 at least 3,000 register tons.	11½	
German East Africa-Hamburg Line.	1. Hamburg-Natal.....	13	230,965	4 at least 2,200 register tons.	10½	} 900,000
	2. Dar-es-Salaam-German coast ports.	13	15,665	1 at least 500 register tons.	(<i>b</i>)	
	3. Mozambique-Portuguese coast ports.	13	10,305	.....do.....	(<i>b</i>)
Total.....		84	999,622	19 at least 51,800 register tons.	4,990,000

a One reserve for lines 2 and 3.*b* Connecting with main line.

The foreign office states that the same arrangement was in force during 1893. The German subsidy law, under which the arrangement with the East African-Hamburg line exists, was enacted February 1, 1890, and has since been unchanged. The law under which the arrangement with the North German Lloyd exists was enacted April 6, 1885. It originally provided also a subsidy of 400,000 marks annually for fifteen years for two steamships of not less than 2,000 net tons, making annually 26 trips (48,880 miles) from Trieste and Brindisi to Port Said. The North German Lloyd abandoned this subsidy in 1892 as a source of loss, and the subsidy has been reduced to 90,000 marks, in return for which its Asiatic and Australian lines stop at Naples or Brindisi. In unusual cases the Government does not insist on penalties for failure to maintain the statutory rate of speed, $11\frac{1}{4}$ knots on the Asiatic and Australian lines. Government compensation, coupled with Government requirements in this case, was a source of loss rather than profit. Bearing on this matter is the following from the annual report of the North German Lloyd Steamship Company for 1893:

"The Government mail steamer line to east Asia and Australia has been satisfactorily developed in the past year. This was accomplished by remodeling the subvention contract, also by the use of suitable steamships, and finally by the increase of freight on the east Asiatic line. We are pleased to report that the Government mail steamer line, which in the year 1892 was carried on at a loss of 35,040 marks, has, during the current year, in addition to its contribution to the premium fund arising from insuring our own vessels, made a clear business profit of 1,184,135 marks."

While no other subsidies are mentioned, Germany pays also to steamships, aggregating about 30,000 net tons, compensation at moderate rates for carrying mails to the United States, and doubtless for a like service to certain Baltic ports.

BREMEN AND HAMBURG LINES.

The report of the United States Commissioner of Navigation for 1894 has the following information as to the North German Lloyd (Bremen) and Hamburg-American lines (Hamburg):

The following reports have been selected as best and most fully illustrating the modes and extent of German steam navigation, considered from the economic point of view. The operations of the North German Lloyd Company are on the Atlantic and Mediterranean and, via the Suez Canal, the Indian and Pacific; of the Hamburg-American on the Atlantic. The various lines operated by these corporations connect Germany with North and South America, the West Indies, Asia, and Australia. The North German Lloyd Company began operations in 1856. The report is for the calendar year ended December 31, 1893, when the fleet of the company consisted of 80 steamships (including 6 under construction), of 225,097 gross tons and 202,731 horsepower, and 78 tenders, barges etc., of 15,955 tons, the most powerful steamships being the *Havel* and *Spree*, of 6,963 gross tons and 12,500 horsepower each. * * *

The Hamburg-American Steamship Company began operations in 1846. The report is for the calendar year ended December 31, 1893, when the fleet of the company consisted of 51 steamships of 155,806 gross tons and 99,725 horsepower, and 41 river steamers, lighters, barges, sloops, etc., the most powerful steamships being the *Fürst Bismarck*, of 8,874 gross tons and 16,400 horsepower, and the *Normannia*, of 8,250 gross tons and 16,000 horsepower. * * *

North German Lloyd.—The following data are extracted from the latest report of the company:

The business year [calendar year 1893] began under unfavorable conditions. On account of the prevailing cholera epidemic in Hamburg, America placed restrictions on immigration into that country, and up to March 1 of the past year we were obliged to discontinue carrying steerage passengers to the United States. On our lines to

South America, to Australia and east Asia, the condition of the freight markets offered little encouragement for the satisfactory development of business. These conditions improved with the beginning of spring by active immigration to the United States, which continued far into the summer months, but on account of the financial depression in the United States was entirely stopped in the autumn.

The Government mail steamer lines to east Asia and Anstralla have been satisfactorily developed in the past year. This was accomplished by remodeling the subvention contract, also by the use of suitable steamships, and finally by the increase of freight on the east Asiatic line. We are pleased to report that the Government mail steamer line, which in the year 1892 was carried on at a loss of 35,040 marks, has during the current year, in addition to its contribution to the premium surplus of the insurance fund, a business surplus of 1,184,134.55 marks to its credit. This surplus is lessened, however, by 188,945.90 marks, a part of the cost of rebuilding the steamers *Bayern* and *Sachsen*, which we have taken from this line. In the New Guinea line we have placed our steamer *Lubeck*; for the trips of this steamer we have always had ample freight.

The lines Bremen-New York and Bremen-Baltimore have made good returns for the months of March to August. The Roland line, opened in April, which we were obliged to carry on during the past year almost entirely by chartered vessels, has, to our satisfaction, developed a marked increase in valuable traffic via Bremen. We have placed on this line in the course of the year our newly acquired steamer *Roland*. In April and May the two twin-screw steamers *Wittekind* and *Willhad* will be placed in service, and it will then be possible to establish regular trips every fourteen days via the Roland line between Bremen and New York. As far as practicable we will, besides this, employ some of our older steamers on emergency on the Roland line.

The express steamship line between Genoa and New York has been well developed. After the Hamburg-American Company decided on its own behalf to establish a fast steamship service between New York, Naples, and Genoa during the winter months, at the close of the year we opened negotiations with this company for arrangements to carry this traffic jointly during the winter months on this line, with weekly expeditions. These negotiations led in the course of the year to a satisfactory agreement as regards the proportionate division of the profits resulting from this common line. We may hope that the pleasant relations resulting from this joint service will offer special inducements to passengers as well as increased offers for freight traffic. The agreement, by lessening competition on both sides, will be to the advantage of both companies.

The good results of the lines between Naples and New York, begun in April of last year, have induced us to establish an independent line between these two places, which we have also, since the beginning of this year, carried on jointly with the Hamburg-American Company, and on which we have placed our steamers *Kronprinz Friedrich Wilhelm* and *Weser*, also the disengaged steamer *Neckar*, from the Government mail steamer lines. During the last few weeks we have extended the trips of the steamers on this line to Messina and Palermo. We intend to relieve the steamer *Weser* by the former Government mail steamer *Braunschweig*. With our steamer *Danzig* we continue regular weekly trips between Genoa, Naples, and Palermo.

On account of the revolution in Brazil our Brazil line has retrograded since our last report; but, thanks to the efficacious protection of the German war vessel stationed at Rio de Janeiro during the disturbance, we were enabled to continue our regular intercourse with that harbor without trouble.

The La Plata line has remained without important changes. The contract entered into with the Hansa Company, also the agreement with the English lines interested in the La Plata traffic, as far as these lines connect with Antwerp, has in a measure lessened competition in regard to freight business; still, on account of the proportionately small amount of freight offered, it has been impossible materially to

improve freight rates. Toward the close of the year we placed the steamers *Pfalz* and *Mark*, built for the La Plata line, in service between Bremen and Buenos Ayres. We feel justified, on account of the splendid passenger accommodations of these steamers, of which passengers will undoubtedly avail themselves, to change our fourteen days' connection with Bremen, Antwerp, Corunna, Vigo, and La Plata, so that every second steamer will stop at Southampton also for taking and landing passengers.

A comparison of the passenger traffic on the transoceanic trips show the following figures:

Lines.	1893.		1892.	
	Outgoing passengers.	Incoming passengers.	Outgoing passengers.	Incoming passengers.
New York line.....	108,543	48,531	95,246	39,147
Baltimore line.....	20,586	4,409	44,746	3,850
South American line.....	4,866	2,542	3,117	4,349
East Asia line.....	6,030	3,266	4,515	1,749
Australian line.....	2,340	2,145	2,721	2,671
Total.....	203,258		202,111	

Up to December 31, 1893, the Norddeutscher Lloyd carried, on transoceanic trips, 2,957,996 passengers.

The results of the European lines were not without profit. The express steamer connection, Bremerhaven-Norderney, has developed satisfactorily, as mentioned in the report of last year.

We intend during the current year, besides the daily connection with Bremerhaven-Norderney to make three trips each week to Borkum via Norderney by means of our fast steamer *Najade*, to be delivered in the middle of June. In compliance with the wishes of the frequenters of the North Sea baths, and especially those of the western part of Germany, we have established during the year a daily connection between Bremerhaven and Heligoland and return, which we intend to continue. Pursuant to an agreement with one of the German railroad companies, the majority of our summer tickets will be honored on that line also for the traffic between Bremerhaven, Hamburg, Leer, Emden, and Norden; also, the majority of the summer tickets for Heligoland will be honored for the traffic from Bremerhaven and Hamburg. The connecting trains should have sleepers direct, Berlin-Bremerhaven and Leipzig-Bremerhaven.

The contract entered into with other continental steamship companies for passenger traffic to North America has been extended over the current year. In order to lessen the competition for freight, we entered into an agreement with the same companies in regard to freights. And, finally, we have agreed with the Hamburg-American Line by which both companies are to receive their share of the American cabin-passenger business.

The lengthening of our steamers *Bayern* and *Sachsen* has been done by the firm of Blohm & Voss, in Hamburg, to our entire satisfaction. The verdict of the public has been unanimous that these two vessels are the best arranged and furnished steamers on the Government mail-steamer line in the business to East Asia. We intend to lengthen our steamer *Preussen* in the same way.

The firm of F. Schishau, in Danzig, has the contract for two fast mail steamers, one of which received the name of *Prinz-Regent Luitpold* while being launched, and the other will be named *Prinz Heinrich*, and will be placed in service this summer. We may hope that after the installation of these vessels the Norddeutscher Lloyd, on the line to east Asia, will be in position to win first place against competing steamer companies.

For the Roland line we bought last year from the firm of Sir W. G. Armstrong, Mitchell & Co., in Newcastle, the steamer *Roland*, which was then under construction; also gave orders for two steamers to the firm of Blohm & Voss, in Hamburg. The last two, twin-screw steamers, as also the *Roland*, are to have the best steering arrangements, and are to be named *Wittekind* and *Willehad*.

The steamers *Pfalz* and *Mark* have been delivered and are satisfactory, and we hope that these steamers, in the traffic to La Plata, will do honor to the Norddeutscher Lloyd. In payment for the steamers *Pfalz* and *Mark* we have given our steamers *Ohio* and *Frankfurt*.

Of the two steamers contracted for with the firm of Müller & Holberg, in Garbow, for the European line, we have received our steamer *Albatross*. We expect to receive the steamer *Falke* soon.

The freight steamer ordered from G. Seebeck, in Geestemunde, has in the meantime been delivered and is satisfactory. The steamer *Lloyd* has been rebuilt, which gives us a first-class passenger boat for the Unterweser.

For the traffic to Norderney and Borkum we have a new fast steamer (skoon), which is to have a speed of 16½ miles (contract to that effect), ordered from the firm of F. Schichau, in Elbing. This steamer will be delivered in June of the current year, and be named *Najade*.

We are now engaged on the plans for building another fast steamer for the New York line.

Hamburg-American Packet Company.—From the report of the Hamburg-American Packet Company for the calendar year 1893 the following extracts are taken:

We regret that we feel obliged to suggest that no dividend be declared for the past business year, on account of the present depreciation in the value of our vessels. On account of the numerous inventions and improvements which have been made in recent years in machinery and vessel construction, old steamers can be utilized with profit only if their book value can be lowered an unusual degree. Again, in consequence of the depressed condition of the shipping business, new vessels can be contracted for at lower figures than ever before. The administration of a steamship company which fully recognizes its responsibilities dare not neglect at this time to strive to bring the book value of its flotilla, as far as possible, up to the standard required by circumstances.

The cholera epidemic has influenced our earnings in the past year almost as much as did the great catastrophe of the foregoing year. Passenger as well as freight traffic suffered continually from lack of confidence, at home and abroad, in the sanitary condition of Hamburg. We were therefore obliged, as far as possible, to contract with friendly steamer companies to seek traffic which was turned away from Hamburg in other harbors. We were successful, although not without great expense and unusual effort, by running our vessels to the Scandinavian and Italian harbors, also to Antwerp, and thus attained nearly the same amount of business as in former years.

We were affected adversely by the decree of the State authorities, which, for sanitary reasons, ordered the discontinuance of the Russian immigration movement, which constituted 50 per cent of all the immigration through Hamburg during recent years. On this account our income was not only lessened by millions, but we were obliged to refund about 500,000 marks, for which amount we had sold passage assignments (called prepaid tickets) to people in America who wished to send for their relatives from the old country, as we were unable to carry out the agreement.

At the beginning of this year we were successful, thanks to the friendly assistance received from our chamber of commerce, in securing the recall of the interdict, so far as traffic of Hamburg was concerned, with conditions, however, which even to-day put us at a disadvantage with all other harbors.

Although we hope that these conditions will soon be entirely withdrawn, and that at last a parity between Hamburg and competing harbors will be reestablished, the sad experiences of past years have made it necessary for us to make arrangements, should it again be necessary to impose extraordinary regulations, for the possible transfer of our business and thus avoid another risk to the existence of our enterprise.

For this purpose we have entered into an agreement with the Norddeutscher Lloyd that we be allowed to transfer our business to Bremen should there be a recurrence of cholera; and in order to be prepared in every way we have closed a contract to lease from the Oldenburg state authorities the Oldenburg Harbor, Nordenham, opposite Bremerhaven, a part of the pier and room for storage, which we are using at the present time for our sailings to West Indies.

Hand in hand with the losses through the abnormal conditions on this side was the unfortunate circumstance of the long crisis in the United States, which had its effect on the North Atlantic passenger and freight traffic. The unfortunate condition of trade, the dread of another cholera epidemic in Europe, and also the attractions of the Exposition in Chicago, worked together greatly to reduce the yearly American cabin passenger traffic toward Europe every spring and back again in the autumn. The traffic which went from Europe to the Exposition in Chicago was very meager, and most of this was second class, instead of first class, and therefore did not in any way compensate us for the loss of our normal business.

Finally the sensational reports of the return of sporadic cases of cholera in September, especially as reported in the United States, as a forerunner of another epidemic, caused still heavier losses and shrinkage in our business and compelled us at times to change the trips of our express steamers to Wilhelmshaven.

Through the extraordinary assistance and protection rendered us by the imperial authorities, in a few days, and mostly by telegraph, it was possible to make the difficult arrangements necessary for transferring such a business so that we could continue our expeditions without interruption.

The contract of the North Atlantic steamship companies has given satisfaction to the united parties during the past year, and has been the cause of still closer relations between us and the Norddeutscher Lloyd. We have closed a contract for several years with the administration of the Norddeutscher Lloyd, by which we in common shall carry on, not only the lines between New York and the Mediterranean, but also the cabin traffic to and from Hamburg, Bremen, Southampton, as also the out-going freight traffic; and have regulated the division of receipts, and thus set aside competition between our companies. That through this union the earning capacity of the two companies is greatly increased is certain, and there is no doubt that this union of the German companies gives a power which will be sufficient to keep competition within bounds and afford protection against all competitors.

The results of the West India Merchant Line were satisfactory, although the traffic was naturally affected by the unfavorable circumstances cited above. It was possible to extend the voyages of this line, in that we increased the number of expeditions from seven to eight per month, at the same time making new connections with Jamaica and harbors of the island of Cuba.

A step of great importance, from which we certainly expect great results for the development of our corporation, is the construction of four immense twin-screw steamers, which are not only arranged for steerage and freight traffic, but also especially adapted on a large scale for forwarding live stock and the transportation of meat in cold storage. These steamers, which can be arranged to carry about 2,500 steerage passengers each, and, by utilizing their entire capacity, can load very near 7,500 tons freight, are, by the use of all the new inventions and improvements, so economical in regard to running expenses that we are guaranteed a speed of 13 miles per hour with a consumption of coal of only 55 or 60 tons per day.

The first of these two vessels (445 feet long, 50 feet wide, and 34 feet deep), which are being constructed in the well-known shipyard of Harlan & Wolf, in Belfast,

and which we have named *Prussia* and *Persia*, are to be delivered in the spring. With the two contracted for in Germany, with the Vulcan Works, in Stettin, and Blohm & Voss, of Hamburg, we have increased the dimensions still further. These vessels will be 460 feet long, with a width of 52 feet and a depth of 35 feet.

Two steamers of the West India line, *India* and *Europa*, which are too small for our trade, we sold to firms in this place, and bought from the German-Australian Steamship Company two steamers built in 1889 and only recently supplied with new boilers, named *Barmen* and *Eberfeld*.

On December 1 of last year we transferred our works from the American quay to the Petersen quay, behind which we have erected our repair shops, which were partially destroyed by fire in 1892.

The equipment magazine has again been erected on the place near our dry dock.

During the year 1893, 315 round trips were made, on which 103,114 passengers of all classes and 1,226,354 cubic meters freight were transported.

The report gives the following list of steamships, barges, lighters, etc., belonging to the company: Fifty-one seagoing steamships, *Albingia*, *Allemannia*, *Ascania*, *Augusta Victoria*, *Australia*, *Baumicall*, *Bavaria*, *Bohemia*, *Borussia*, *California*, *Cheruskia*, *Colonia*, *Columbia*, *Cremon*, *Croatia*, *Dania*, *Europa*, *Flandria*, *Francia*, *Fürst Bismarck*, *Galicia*, *Gellert*, *Gothia*, *Grimm*, *Helvetia*, *Holsatia*, *Hungaria*, *India*, *Italia*, *Kehrwieder*, *Markomania*, *Moravia*, *Normannia*, *Polaria*, *Polynesia*, *Rhenania*, *Rhaetia*, *Rugia*, *Russia*, *Saxonia*, *Scandia*, *Slavonia*, *Steinhof*, *Suevia*, *Teutonia*, *Thuringia*, *Valesia*, *Venetia*, *Virginia*, *Wandrahm*, *Wieland*; 2 twin-screw steamers, under construction; 8 river steamers, 6 steam sloops, 1 steam hoisting machine, 3 box barges, 1 barge, 21 iron lighters, 2 lighters at St. Thomas.

TONNAGE OF GERMAN STEAMSHIPS.

The report of the Commissioner of Navigation, 1894, pages 183 and 184, gives the following figures of tonnage, etc., of vessels belonging to the North German Lloyd, Hamburg-American, and Union lines:

NORTH GERMAN LLOYD.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Havel.....	German.....	6,963	Steel.....	1890	180	.....
Spree.....	do.....	6,963	do.....	1890	180	.....
Lahn.....	do.....	5,097	do.....	1887	180	.....
Saale.....	do.....	4,965	do.....	1886	180	.....
Trave.....	do.....	4,966	do.....	1886	180	.....
Aller.....	do.....	4,964	do.....	1885	180	.....
Elbe.....	do.....	4,510	Iron.....	1881	180	.....
München.....	do.....	4,796	Steel.....	1889	60	.....
H. H. Meier.....	do.....	5,306	do.....	1892	60	.....
Roland.....	do.....	3,660	do.....	1893	60	.....
Wittekind.....	do.....	4,990	do.....	1889	60	.....
NAPLES.						
Ems.....	German.....	4,728	Iron.....	1884	180	.....
Fulda.....	do.....	4,814	do.....	1882	180	.....
Werra.....	do.....	4,815	do.....	1882	180	.....
Kaiser Wilhelm II.....	do.....	6,991	Steel.....	1889	180	.....
		90,067			2,460	a \$8,000,000

a Approximate.

HAMBURG-AMERICAN LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
EXPRESS.						
Augusta Victoria.....	German.....	7,761	Steel.....	1889	300	.....
Columbia.....	do.....	7,363	do.....	1889	300	.....
Fuerst Bismarck.....	do.....	8,874	do.....	1890	300	.....
Normannia.....	do.....	8,250	do.....	1890	300	.....
SCANDIA LINE.						
Virginia.....	German.....	2,884	Steel.....	1891	75	.....
Venetia.....	do.....	2,891	do.....	1891	75	.....
Slavonia.....	do.....	2,274	Iron.....	1883	75	.....
Gothia.....	do.....	2,433	do.....	1884	.....	.....
MEDITERRANEAN.						
Suevia.....	German.....	3,609	Iron.....	1874	75	.....
Wieland.....	do.....	3,504	do.....	1874	75	.....
Gellert.....	do.....	3,533	do.....	1874	75	.....
HAMBURG.						
Scandia.....	German.....	4,375	Iron.....	1899	75	.....
Bohemia.....	do.....	3,423	do.....	1891	75	.....
Russia.....	do.....	4,017	do.....	1899	75	.....
Moravia.....	do.....	3,739	do.....	1883	40	.....
Dania.....	do.....	4,379	Steel.....	1890	75	.....
Rhaetia.....	do.....	3,553	do.....	1883	40	.....
Rugia.....	do.....	3,467	Iron.....	1882	40	.....
California.....	do.....	2,690	do.....	1883	40	.....
Italia.....	do.....	3,498	Steel.....	1889	40	.....
Prussia.....	do.....	5,937	do.....	1894	75	.....
Persia.....	do.....	6,000	do.....	1894	75	.....
Grimm.....	do.....	2,599	do.....	1890	40	.....
		101,053			2,340	a \$6,000,000

UNION LINE—HAMBURG, NEW YORK, AND NAPLES.

Amalfi.....	German.....	2,345	Iron.....	1881	40	\$300,000
Marsala.....	do.....	2,397	do.....	1882	40	370,000
Taormina.....	do.....	2,422	do.....	1884	40	465,000
Sorrento.....	do.....	2,362	do.....	1881	40	325,000
		9,526			160	1,460,000

a Approximate.

RAILROADS.¹

I.

STATE RAILWAYS AND PRIVATE RAILWAYS MANAGED BY THE STATE.

Railways of the Empire in Alsace-Lorraine.—Entire length, 1,412.86 kilometers,² of which 1,395.88 were in Alsace-Lorraine and 16.98 in Prussia.

Military Railway.—Entire length, 45.61 kilometers; all in Prussia.

Prussian State railways.—Entire length, 25,596.02 kilometers, of which 23,837.55 were in Prussia, 142.04 in Saxony, 111.53 in Hesse, 125.47 in Mecklenburg-Schwerin, 155.95 in Saxe-Weimar, 72.94 in Mecklenburg-Strelitz, 62.65 in Oldenburg, 354.46 in Brunswick, 36 in Saxe-Meiningen, 0.93 in Saxe-Altenburg, 188.41 in Saxe-Coburg-Gotha, 268.03 in Anhalt, 14.86 in Schwarzburg-Rudolstadt, 49.45 in Schwarzburg-Sondershausen, 17.08 in Waldeck, 16.86 in Reuss (new line); 24.32 in Schaumburg-Lippe, 29.30 in Lippe, 42.11 in Bremen, 35.45 in Hamburg, 5.26 in Austria, and 5.37 in the Netherlands.

¹ Translated from Consul-General De Kay's inclosure, German Railway Statistics.² Kilometer equals 0.62137 mile.

Bavarian State railways.—Entire length, 4,991.34 kilometers, of which 4.62 were in Prussia, 4,912.82 in Bavaria, 22.50 in Saxe-Meiningen, 4.17 in Saxe-Coburg-Gotha, and 47.23 in Austria.

Saxon State railways.—Entire length, 2,364.47 kilometers, of which 12.62 were in Prussia, 2,105.32 in Saxony, 39.82 in Saxe-Weimar, 0.83 in Saxe-Meiningen, 98.08 in Saxe-Altenburg, 35.34 in Reuss (old line), 46.90 in Reuss (new line), and 25.56 in Austria.

Wurtemberg State railways.—Entire length, 1,664.52 kilometers, of which 69.72 were in Prussia, 8.13 in Bavaria, 1,486.90 in Wurtemberg, and 99.77 in Baden.

State railways of Baden.—Entire length, 1,429.10 kilometers, of which 20.96 were in Prussia, 0.03 in Bavaria, 24.15 in Wurtemberg, 1,320.63 in Baden, 22.17 in Hesse, and 41.16 in Switzerland.

Main-Neckar Railway, with that of Eberstadt and Pflugstadt.—Entire length, 96.95 kilometers, of which 6.91 were in Prussia, 38.78 in Baden, and 51.26 in Hesse.

Upper Hessian railways.—Entire length, 220.22 kilometers, of which 28 were in Prussia, and 192.22 in Hesse.

Mecklenburg Friedrich Franz Railway, with that of Weimar and Karow.—Entire length, 694.56 kilometers, of which 625.67 were in Mecklenburg-Schwerin, 62.01 in Oldenburg, and 6.88 in Lubeck.

State railways of Oldenburg.—Entire length, 396.42 kilometers, of which 82.92 were in Prussia, 307.55 in Oldenburg, and 5.97 in Bremen.

Weimar, Berka and Blankenhain Railway.—Entire length, 32.08 kilometers; all in Saxe-Weimar.

The entire length of the German State railways was 38,944.17 kilometers—in Alsace-Lorraine, 1,395.88 kilometers; in Prussia, 24,125.89 kilometers; in Bavaria, 4,920.98 kilometers; in Saxony, 2,247.36 kilometers; in Wurtemberg, 1,511.05 kilometers; in Baden, 1,459.18 kilometers; in Hesse, 377.18 kilometers; in Mecklenburg-Schwerin, 751.14 kilometers; in Saxe-Weimar, 227.85 kilometers; in Mecklenburg-Strelitz, 134.95 kilometers; in Oldenburg, 370.20 kilometers; in Brunswick, 354.46 kilometers; in Saxe-Meiningen, 59.33 kilometers; in Saxe-Altenburg, 99.01 kilometers; in Saxe-Coburg-Gotha, 192.58 kilometers; in Anhalt, 268.03 kilometers; in Schwarzburg-Rudolstadt, 14.86 kilometers; in Schwarzburg-Sondershausen, 49.45 kilometers; in Waldeck, 17.08 kilometers; in Reuss (old line), 35.34 kilometers; in Reuss (new line), 63.76 kilometers; in Schaumburg-Lippe, 24.32 kilometers; in Lippe, 29.30 kilometers; in Lubeck, 6.88 kilometers; in Bremen, 48.08 kilometers; in Hamburg, 35.45 kilometers; in Austria, 78.05 kilometers; in the Netherlands, 5.37 kilometers; in Switzerland, 41.16 kilometers.

II.

PRIVATE RAILWAYS UNDER STATE MANAGEMENT.

The entire length of the private railway lines under State management was 103.93 kilometers, divided as follows:

Birkenfeld Railway.—Length, 5.23 kilometers; all in Oldenburg.

Farge and Vegesack Railway.—Length, 10.44 kilometers, of which 10.33 were in Prussia and 0.11 in Bremen.

Ilme Railway.—Length, 13.25 kilometers; all in Prussia.

Kreis Oldenburg Railway.—Length, 23.12 kilometers; all in Prussia.

Zittau and Reichenberg Railway.—Length, 26.61 kilometers, of which 4.97 were in Saxony and 21.64 in Austria.

Altenburg-Zeitz Railway.—Length, 25.28 kilometers, of which 11.75 were in Prussia and 13.53 in Saxe-Altenburg.

Of the private railway lines under State management 58.45 kilometers were in Prussia, and the rest as above stated.

III.

PRIVATE RAILWAYS UNDER PRIVATE MANAGEMENT.

Dortmund, Gronau and Enschede Railway.—Length, 96.89 kilometers; all in Prussia.

Lubeck and Buchen Railway.—Length, 126.18 kilometers, of which 86.50 were in Prussia, 34.94 in Lübeck, and 4.74 in Hamburg.

Marienburg and Mlawka Railway.—Length, 149.32 kilometers; all in Prussia.

East Prussian Southern Railway, and that of Fischhausen and Palmnicken.—Length, 261.27 kilometers; all in Prussia.

Alt Damm and Colberg Railway.—Length, 122.27 kilometers; all in Prussia.

Altona and Kaltenkirchen Railway.—Length, 36.07 kilometers; all in Prussia.

Breslau and Warsaw Railway.—Length, 55.34 kilometers; all in Prussia.

Crefeld Railway.—Length, 60.86 kilometers; all in Prussia.

Cronberg Railway.—Length, 9.62 kilometers; all in Prussia.

Dahme and Uckro Railway.—Length, 12.53 kilometers; all in Prussia.

Eisean and Siegen Railway.—Length, 12.20 kilometers; all in Prussia.

Georgs Marienhutte Railway.—Length, 7.30 kilometers; all in Prussia.

Hoya Railway.—Length, 6.91 kilometers; all in Prussia.

Kiel and Flensburg Railway.—Length, 78.78 kilometers; all in Prussia.

Konigsberg and Cranz Railway.—Length, 28.30 kilometers; all in Prussia.

Neuhaldensleben Railway.—Length, 31.71 kilometers; all in Prussia.

Osterwieck and Wasserleben Railway.—Length, 5.18 kilometers; all in Prussia.

Paulinenane and Neu Ruppin Railway.—Length, 28.08 kilometers; all in Prussia.

Peine and Ilsede Railway.—Length, 7.95 kilometers; all in Prussia.

Prignitz Railway.—Length, 44.93 kilometers; all in Prussia.

Schleswig and Angeln Railway.—Length, 21.46 kilometers; all in Prussia.

Stargard and Custrin Railway.—Length, 116.36 kilometers; all in Prussia.

Stendal and Tangermunde Railway.—Length, 13.23 kilometers; all in Prussia.

Warstein and Lippstadt Railway.—Length, 30.88 kilometers; all in Prussia.

Wittenberg and Perleberg Railway.—Length, 10.54 kilometers; all in Prussia.

Zschipkan and Finsterwalde Railway.—Length, 20.16 kilometers; all in Prussia.

Eutin and Lubeck Railway.—Length, 39.87 kilometers, of which 34.79 were in Oldenburg and 5.08 in Lubeck.

Hessian Ludwig Railway.—Length, 696.76 kilometers, of which 154.16 were in Prussia, 9.15 in Bavaria, 26.96 in Baden, and 506.49 in Hesse.

Ludwig Railway (Nurnberg-Furth).—Length, 6.04 kilometers; all in Bavaria.

Neustrelitz-Warnemünde Railway.—Length, 127.71 kilometers, of which 114.61 were in Hesse and 13.10 in Mecklenburg-Strelitz.

Palatinate Railways.—Length, 675.22 kilometers, of which 11.72 were in Alsace-Lorraine, 0.58 in Prussia, and 654.92 in Bavaria.

Saal Railway.—Length, 93.87 kilometers, of which 0.47 were in Prussia, 33.09 in Saxe-Weimar, 16.32 in Saxe-Meiningen, 28.53 in Saxe-Altenburg, and 15.46 in Anhalt.

Weimar and Gera Railway.—Length, 68.65 kilometers, of which 29.75 were in Saxe-Weimar, 0.61 in Saxe-Meiningen, 23.25 in Saxe-Altenburg, and 15.04 in Reuss (younger line).

Werra Railway.—Length, 216.12 kilometers, of which 12.81 were in Prussia, 17.85 in Saxe-Weimar, 122.41 in Saxe-Meiningen, and 63.05 in Saxe-Coburg-Gotha.

Arnstadt and Ichtershausen Railway.—Length, 5.12 kilometers, of which 1.72 were in Saxe-Coburg-Gotha and 3.40 in Schwarzburg-Sondershausen.

Bavarian Railways of the Local Railway Stock Company of Munich.—Length, 106.71 kilometers; all in Bavaria.

Boizenburg City and Harbor Railway.—Length, 2.57 kilometers; all in Mecklenburg-Schwerin.

Brunswick Railway.—Length, 82.08 kilometers, of which 20.05 were in Prussia and 62.03 in Brunswick.

Bregthal Railway (Hüfingen and Hammereisenbach).—Length, 15.97 kilometers; all in Baden.

Degendorf and Metten Railway.—Length, 5.32 kilometers; all in Bavaria.

Eisenberg and Crossen Railway.—Length, 8.25 kilometers, of which 0.28 were in Prussia and 7.97 in Saxe-Meiningen.

Ermsthal Railway.—Length, 10.43 kilometers; all in Württemberg.

Gotteszell and Viechtach Railway.—Length, 24.97 kilometers; all in Bavaria.

Halberstadt and Blankenburg Railway.—Length, 55.08 kilometers, of which 31.16 were in Prussia and 23.92 in Brunswick.

Hohenebra and Ebeleben Railway.—Length, 8.70 kilometers; all in Schwarzburg-Sondershausen.

Ilmenau and Grossbreitenbach Railway.—Length, 19.13 kilometers, of which 2.04 were in Saxe-Weimar and 17.09 in Schwarzburg-Sondershausen.

Kirchheim Railway.—Length, 6.26 kilometers; all in Bavaria.

Mecklenburg Southern Railway.—Length, 116.46 kilometers, of which 107.82 were in Mecklenburg-Schwerin and 8.64 in Mecklenburg-Strelitz.

Neubrandenburg and Friedland Railway.—Length, 25.63 kilometers; all in Mecklenburg-Strelitz.

Neustrelitz, Wesenberg and Miroie Railway.—Length, 22.65 kilometers; all in Mecklenburg-Strelitz.

Osthofen and Westhofen Railway.—Length, 22.65 kilometers; all in Mecklenburg-Strelitz.

Parchim and Ludwigslust Railway.—Length, 25.87 kilometers; all in Mecklenburg-Schwerin.

Reinheim and Reichelsheim Railway.—Length, 17.94 kilometers; all in Hesse.

Ruhla Railway.—Length, 7.29 kilometers; of which 6.68 were in Saxe-Weimar and 0.61 in Saxe-Coburg-Gotha.

Schaftlach and Gmund Railway.—Length, 7.71 kilometers; all in Bavaria.

Sprendlingen and Wollstein Railway.—Length, 5.90 kilometers, all in Hesse.

Worms and Offenstein Railway.—Length, 10.93 kilometers; all in Hesse.

The entire length of the private railways under private management in Germany was 3,915.59 kilometers, of which 11.72 were in Alsace-Lorraine, 1,582.15 in Prussia, 814.82 in Bavaria, 17.69 in Wurtemberg, 42.93 in Baden, 547.32 in Hesse, 250.87 in Mecklenburg-Schwerin, 89.41 in Saxe-Weimar, 70.02 in Mecklenburg-Strelitz, 34.79 in Oldenburg, 85.95 in Brunswick, 139.34 in Saxe-Meiningen, 59.75 in Saxe-Altenburg, 65.38 in Saxe-Coburg-Gotha, 15.46 in Schwarzburg-Rudolstadt, 29.19 in Schwarzburg-Sondershausen, 15.04 in Reuss (new line), 40.02 in Lubeck, and 4.74 in Hamburg.

RAILROAD ADMINISTRATION.¹

Railways in Germany are divided, with respect to their ownership and management, into three general classes, viz: (1) Imperial railroads, such as those of Alsace-Lorraine, which are owned and managed by the Imperial Government; (2) State railways—that is, roads and systems owned and managed by States like Prussia, Saxony, Bavaria, and

¹ Extracts reprinted from Consular Reports No. 170, November, 1894.

Wurtemberg, and (3) private railways, which includes the roads which were built and remain in the possession of incorporated companies, similar in all important respects to the railway companies of Great Britain and the United States.

STATE RAILWAYS.

Of these three groups, by far the most important in Germany is the second—the State railways—and of this foremost group the principal unit is formed by the State railways of Prussia, which include 25,633.57 kilometers (15,928 miles), or more than half of the 42,963.69 kilometers (26,847 miles) of railroads in operation within the German Empire at the close of 1893. As the Prussian system includes the great through lines between Berlin and Hamburg, Cologne, Frankfort, and Breslau, and, with one exception, all the important railroads which traverse the district of Frankfort, it is chosen as the principal subject of this report, the second portion of which is devoted to the Hessische Ludwig's Railway Company, as a prominent example of a railway system under corporate ownership and management.

The Prussian railways are owned and operated not as distinct individual lines, each having its specific termini, tariffs, and a special management controlling a single road as a separate unit, but as a consolidated system covering the whole territory of Prussia, which is divided for this purpose into eleven districts, each of which is managed by a president and a complete administration, including all the various bureaus of construction and supply, passenger and freight traffic, and all their subordinate departments in elaborate and complete detail. These eleven geographical districts divide the entire State railway system of Prussia into the same number of working sections or divisions, similar in many respects to the separate divisions of a transcontinental railway working under one central management in the United States. The districts have their headquarters, respectively, at Altona, Berlin, Breslau, Bromberg, Elberfeld, Erfurt, Frankfort, Hanover, Magdeburg, and two at Cologne, viz., one for the State railroads on the right bank and the other for the roads on the left bank of the Rhine.

The administration of each of these eleven divisions controls whatever part of the State railways which lie within the geographical limits of its district. The Hanover division has 2,306 kilometers (1,382 miles) of track; that of Frankfort, 1,335.94 kilometers (830 miles); and that of Berlin, 3,215 kilometers (1,998 miles), the least important being Elberfeld, with 1,246.12 kilometers (774 miles) of line. All the division administrations report to a central office in Berlin, where the statistics are collated and more or less completely published, and it is for this reason—the reports being from geographical divisions and not from complete and distinct roads, the whole Prussian railway system being treated in the records of a collective unit—that separate statistics of any individual line which runs through the territory of two or more

districts are not available. With this inevitable modification, the questions presented by the instructions of the Department may be answered as follows, values being given in United States currency and distances in kilometers:

The Prussian State railway system is under the control of the State Government of Prussia.

The total length of road operated is 25,633 kilometers (15,928 miles), of which 15,412.75 kilometers are single tracked, 9,967.92 kilometers are double tracked, 36.76 kilometers have triple tracks, and 41.22 kilometers have quadruple tracks.

The number of passengers carried was 324,530,111, as follows:

First class (0.4 per cent).....	1, 225, 552
Second class (10.4 per cent).....	33, 835, 279
Third class (51.2 per cent).....	166, 139, 873
Fourth class (36.5 per cent).....	118, 330, 873
Military.....	4, 998, 534
Total.....	324, 530, 111
Total number of tons of freight carried.....	147, 699, 422

The rates charged for transportation of passengers were as follows:

Description.	Per kilo- meter.	Per mile.	Description.	Per kilo- meter.	Per mile.
	<i>Cents.</i>	<i>Cents.</i>		<i>Cents.</i>	<i>Cents.</i>
First class.....	1. 91	3. 09	Fourth class.....	0. 492	0. 798
Second class.....	1. 237	2. 01	Military.....	. 382	. 619
Third class.....	. 762	1. 29			

Freight charges are classified under three special schedules or tariffs, numbered, respectively, I, II, and III. Each kind of merchandise is charged as freight according to the schedule to which it belongs, under the decision of the Deutscher Eisenbahn-Verband. Thus wheat and flour are rated as first-class freight; iron plates, machinery, etc., come under the second schedule; and pig iron and coal come under Schedule III. The cost per ton for a haul of 1 kilometer is the same for all three classes of freight, but as the distance carried increases, the second and third class schedules decline relatively in proportion to the length of haul until a ton of first-class freight carried 1,000 kilometers (621 miles) pays \$10.99, while a ton of second-class freight carried the same distance costs \$8.61, and a ton of third-class freight carried the same distance costs \$5.52.

The following rates per ton for wheat, flour, pig iron, and coal carried 1, 30, 50, 100, and 500 kilometers, will illustrate the general working of the schedules:

Articles.	1 kilome- ter (0.6214 mile).	30 kilome- ters (18.64 miles).	50 kilome- ters (31.07 miles).	100 kilome- ters (62.14 miles).	500 kilome- ters (310.7 miles).
Wheat (first class).....	\$0. 20	\$0. 54	\$0. 78	\$1. 29	\$5. 64
Flour (first class).....	. 20	. 54	. 78	1. 29	5. 64
Pig iron (third class).....	. 20	. 47	. 59½	. 85	2. 92
Coal (third class).....	. 20	. 47	. 59½	. 85	2. 92

PRIVATE RAILWAY CORPORATIONS.

In order to illustrate more completely the relative conditions of State and corporate railway management in the consular district of Frankfort, there is herewith presented the following exhibit of the Hessische Ludwig's Railway Company, a private corporation, organized in 1844, which built and still manages the system of railways which lies within the territory of the Grand Duchy of Hesse.

The central management of the company is located at Mayence, which is the geographical focus of the system, and its lines extend down along the left bank of the Rhine beyond Bingen, whence it is continued as an unbroken route by the Prussian State line to Cologne, eastward through Frankfort, Hanau, and Aschaffenburg to the Bavarian frontier, southward through Worms to Eberbach, and northward to Wiesbaden.

The capital stock of the company is 111,900,000 marks (\$26,632,200), on which were paid dividends of $4\frac{3}{4}$ per cent in 1890 and 1891, and $4\frac{1}{2}$ per cent in 1892. Its shares stand in the market to-day at 114 to 115. Like the Prussian State railways above described, the Hessische Ludwig's is a network or convergent system rather than an extended line, and includes twenty-eight different roads and branches, united under one ownership and management, and having an aggregate length of 699.72 kilometers (434.52 miles). The first portion of this system was opened for traffic in September, 1848, and its latest construction was finished in August, 1888. Applying to this corporation the inquiries presented by the Department circular of April 10, 1894, the exhibit is as follows:

(1) The Hessische Ludwig's Railway Company is a private railway corporation, similar in organization and management to railway companies in Great Britain and the United States.

(2) The central terminus is at Mayence, and the points touched are Frankfort, Hanau, Worms, Wisbaden, Alzey, Bischofsheim, and Sachsenhausen.

(3) The total length of the line is 699.72 kilometers (434.52 miles). Distances between main points are: Mayence through Worms to Bavarian frontier, 47.25 kilometers; Mayence by Bingen to Prussian frontier, 30.58 kilometers; Mayence to Aschaffenburg, 76.21 kilometers; Mayence to Frankfort, 38 kilometers.

(4) The condition of the line is good. Bridges are of iron and stone, and the track is well ballasted and well kept. Stations are neat and in good repair. Locomotives and cars are mainly of old patterns, but are well kept and in serviceable condition.

(5) Double-tracked lines aggregate 371.53 kilometers (230.86 miles), and single-tracked lines 328.19 kilometers (203.94 miles).

(6) From Frankfort to Mayence and Bingen, there are thirteen daily passenger trains in each direction; from Frankfort via Hanau to Eber-

bach, seven daily trains each way. Smaller branch lines run five or six daily trains in winter and seven in summer.

(7) The rates for passengers are the same as those given above for the State railways of Prussia, and where the lines of the Hessische Ludwig's Company parallel those of Prussia, as, for example, from Frankfort to Bingen, on either bank of the Main and Rhine, passage tickets are interchangeable—that is, good over either line. Passenger rates per kilometer are: First class, 1.91 cents; second class, 1.237 cents; third class, 0.762 cent; fourth class, 0.492 cent; military, 0.382 cent (3.09, 2.01, 1.29, 0.798, and 0.619 cents per mile).

Freight rates are also identical with those given for the Prussian State railways. All freights are grouped, according to the nature of the merchandise, under three general classes, viz, first, second, and third class freights, and the charge for transportation in each class is in accordance with the distance carried, the price per ton per kilometer declining gradually and in mathematical ratio to the increased length of haul.

None of the lines of this company overcome any great natural obstacles. The principal bridge construction is that which spans the Rhine at Mayence.

FRANK H. MASON,
Consul-General.

FRANKFORT, *June 21, 1894.*

CANALS.¹

A map issued by the Prussian minister for public works shows the German waterways and their capacity, viz:

(1) Friederich Wilhelm or Muellerse Canal, which unites the Oder and Spree, is 24 kilometers in length.

(2) Tinord Canal, which unites the Oder and Havel, is 48 kilometers in length.

(3) Plauer Canal, which unites the Havel and Elbe, is 35 kilometers in length.

(4) Ruppine Canal, which unites the Rhine and Havel, is 38 kilometers in length.

(5) Bromberger Canal, which unites the Oder and Weischel, is 28 kilometers in length.

These first canals have been and are still of the greatest importance to the Prussian Kingdom, and especially to the city of Berlin.

They connect nearly all the great rivers running through Prussia from south to north into the Baltic or North Sea.

The great progress made by Berlin during the past twenty years would have been quite impossible without these artificial waterways, as nearly all the building materials used in the extension of the city have been transported to Berlin through their agency.

¹Reprinted from Special Consular Reports, "Canals and Irrigation."

The importance of Magdeburg as a center of the German sugar industry is likewise due to the facilities offered by these five canals for the cheap transportation of all sorts of bulky material.

All the canals in the Prussian Kingdom belong to the Government and are managed by the ministry of public works. They were constructed entirely for the benefit of the people, and have never been an object of speculation.

The traffic is immense; the rates of transportation very low.

The canals are administered with great care and with the best possible pecuniary advantage to the Government.

The gradually falling courses of the rivers of Prussia favor the construction and operation of canals. Some canals were constructed exclusively for the purpose of preventing inundations, whilst some others serve only for wood floating.

(6) The Elbing-Nogat Canal leads to the Frische-Haff, a part of the Baltic Sea.

(7) The Johannisburg Canal unites several lakes, the principal traffic being wood floating.

(8) Hamme-Oste Canal unites the Elbe and Weser.

(9) Hunte-Ems Canal unites the Weser and Ems.

(10) Jade Canal unites the North Sea and Ems.

(11) Ems-Rhin Canal unites the Rhine and Ems.

(12) Hadamar Canal unites the Elbe and Weser.

(13) Eider Canal, near Kiel, leads from the Baltic to the North Sea; is 48 kilometers in length, 11 feet deep, and 96 feet broad on the surface.

(14) The Ludwigs Canal in Bavaria is very important, uniting the Donau, the Maia, and the Rhine. It is 188 kilometers in length, 5 to 6 feet in depth, 54 feet breadth on the surface, and 34 feet at the bottom.

(15) Alsace-Lorraine-Rhine-Rhone Canal leads from the Rhine near Strasburg to the Rhone in France.

(16) Rhine-Marne Canal leads from the Rhine near Strasburg to the Marne in France.

(17) Saar Canal leads from Saarburg to Saargemund.

The testimony is unanimous that all these canals have been worked for the benefit of the people, and have aided materially in advancing the commercial prosperity of the country.

W. H. EDWARDS,
Consul-General.

BERLIN, *October 9, 1889.*

ALSACE-LORRAINE.¹

The canal system of Alsace-Lorraine consists of six main canals, with several branch canals. The main canals are:

(1) The Rhine-Rhone Canal, from the French frontier to Mulhausen and thence to Strasburg.

¹ Extract from report of Consul Johnson, of Kiel, September 21, 1889, published in "Canals and Irrigation."

- (2) The Strasburg Canal system.
- (3) The Breusch Canal, from Goolsheim to Strasburg.
- (4) The Rhine-Marne Canal, from the French frontier to Saarburg, Fabern, Pfalzburg, Hochfelden, Brumath to Strasburg.
- (5) The Saar Coal Canal, from the Rhine-Marne Canal, near Gondersingen, to Saarbrucken.
- (6) The Moselle Canal, from the Rhine-Marne Canal to Metz, with branches.

The number of boats frequenting the canals of Alsace-Lorraine is about 1,500, manned by about 4,000 persons. The size and carrying capacity of the canal boats are different, according to their purpose and according to the mode of building which is customary where they are constructed.

BALTIC AND NORTH SEA CANAL.¹

In view of the opening of the Baltic and North Sea Canal on the 20th of June, the description of the canal by Consul Johnson, of Hamburg, published in Consular Reports No. 129 (June, 1891), page 209, is of special interest at this time. The legislation for connecting the Baltic with the North Sea was enacted in 1886. The first spadeful of earth inaugurating the work was turned by Emperor William I at Holtenau, near Kiel, on the 3d of June, 1887. The canal is 98.6 kilometers (61.27 miles) in length. It begins at Holtenau, on the Bay of Kiel, and terminates near Brunsbittel, at the mouth of the River Elbe, thus running clear through the province of Schleswig-Holstein from northeast to southwest. Both openings are provided with huge locks. Near Rendsburg there is a third lock connecting the canal with the old Eider Canal. The medium water level of the canal will be about equal to the medium water level of Kiel Harbor. At the lowest tide the profile of the canal has, in a depth of 6.17 meters (20 feet 6 inches) below the surface of the water, a navigable width of 36 meters (118.11 feet), so as to allow the largest Baltic steamers to pass each other. For the navy, 22 meters (72.18 feet) of canal bottom are provided, at least 58 meters (190.29 feet) of water surface, and 8½ meters (27 feet 9 inches) depth of water. The greatest depth for merchant vessels was calculated at 6.5 meters (21 feet 3 inches). The estimated cost was \$37,128,000. Two-thirds of the cost is defrayed by the German Empire; the remaining one-third by Prussia. The time saved by a steamship sailing from Kiel to Hamburg via the canal, instead of through the Skaugh (the strait between Jutland and Sweden), is estimated at two and one-half days. The time of passage through the canal, including stoppages and delays, will be about thirteen hours. In time of peace the canal is to be open to men-of-war as well as merchant vessels of every nation, but in time of war its use will be restricted to vessels of the German navy. Many vessels have been

¹ Reprinted from Consular Reports No. 175, April, 1895, pp. 603, 604.

wrecked and many lives lost on the Danish and Swedish coasts, in waters which need not be navigated after the canal is opened to traffic. Its strategic importance to Germany will also be great, as it will place that country's two naval ports, Kiel on the Baltic and Wilhelmshafen on the North Sea, within easy access of each other.

HIGHWAYS.¹

The excellent roads of Germany are mainly a heritage from the century which immediately preceded the introduction of railroads. In those days the mails and the few travelers who journeyed by public conveyance were carried by post chaises; freight was transported by great, lumbering wagons, each drawn by six horses, and, what was regarded as not less important in that period of prolonged and incessant warfare, broad, smooth roads were necessary for the rapid movement of the king's armies with their supply trains and artillery. Accordingly the construction and maintenance of public highways was then an important function of the national Government, administered by a vast bureau or department similar to the department of Ponts et Chaussées now maintained in France. It required many years after the introduction of railroads to persuade the conservative officials of the Prussian Government that the period of freight wagons and post chaises was forever past, and that thenceforth their splendid system of macadamized and graded highways must play a secondary rôle. The lesson was finally learned, however, and on the organization of the empire, in 1870, or soon thereafter, the state assumed control of the principal railways and turned the public roads back to the care of the provinces. The consequence is that Baden, Wurtemberg, Bavaria, Westphalia, and the other provinces of Germany have each their separate system of administration for the construction and maintenance of public roads.

As a result of the circumstances already noticed, very few new roads are now constructed in this part of Germany. The great national roads which were built before the railway period are adequate for all military purposes. The principal work of later years has been to improve suburban highways and secure easy communication at all seasons between important railway stations and the surrounding districts. For this purpose narrower and cheaper roads than those formerly built are frequently adequate, so that it may be said in general that the standard of road building has deteriorated during the last twenty years in all parts of Germany, except Baden, where the highest grade of excellence is still maintained. In respect to construction, the German process is identical with that of France and Switzerland. Every

¹Extract from report of Consul-General Mason, of Frankfort on the Main, February 13, 1891, printed in Special Consular Reports, "Streets and Highways."

important road is a graded, macadamized turnpike, with culverts of massive stone, ditches on either side (which are paved wherever there is danger of washing), and generally lined with trees (either poplar, sycamore, or linden). All slopes and counterscarps are secured by grass, planted from seed when the soil is sufficiently fertile to receive it, otherwise by turfing. Where the slope is necessarily steep and unstable, it is faced, like the retaining walls of embankments, with solid masonry.

The profile and alignment of each road is a skillful compromise between directness of route and an easy gradient. Wherever practicable, the road is a straight line between the points connected; when the exigencies of surface forbid this, the best skill of the engineer is employed to circumvent the obstacle by the most direct route compatible with a practicable grade. Bridges were formerly exclusively of masonry, but of late years iron and steel structures of various patterns similar to those used in the United States for railway and road bridges have been introduced. Wherever a German road is flanked by a slope or precipice which presents the slightest danger, the exposed side is guarded by a line of heavy stone posts, connected wherever necessary by railings of iron or wood, and in many places these pillars are of white basalt, which renders them more easily distinguishable at night.

FRANKFORT ON THE MAIN.

There are no canals of any consequence in this district, and but one important canalized river, the lower Main, which has been improved by dams, locks, and dredging operations so as to enable freight boats from the Rhine to ascend the river to Frankfort, a distance of 20 miles. The highways of commerce in this district include, therefore, the canalized River Main and the railways, which are numerous and important, Frankfort being one of the most important railway centers in southern Germany.

Railways.—The great through lines of railways converging at this point belong mainly to the State railway system of Prussia, and are owned and managed by the State as a collective branch of the public service, divided into eleven districts or geographical divisions, each managed by a complete and distinct administration, subordinate to the central bureau of direction at Berlin. The headquarters of these districts, which comprise collectively the entire territory of Prussia, are at Frankfort, Cologne, Magdeburg, Hanover, Breslau, Bramberg, Elberfeld, Erfurt, Altona, and Berlin, respectively, and the records of each separate divisional administration cover every detail of the cost, earnings, expenses, etc., of each mile of State railway within the geographical limits of that district. Each through line from Frankfort to Berlin, Hamburg, or other important German city passes, therefore, through two or more divisions, and is in respect to its management

and statistics under as many different although similar and closely associated administrations. The principal through lines radiating from Frankfort include two between this city and Berlin, one to Hamburg and Bremen, two down the Rhine to Cologne, one via Mannheim and Strasburg to Switzerland, one via Darmstadt, Heidelberg, Karlsruhe, and Freiburg to Basel, and one eastward to Wurzburg, Nuremberg, and Munich.

(1) The most direct line from Frankfort to Berlin is that via Hanau, Bebra, Erfurt, Halle, and Wittenberg. It is 334 miles in length, and traverses the railway divisions or districts of Frankfort, Erfurt, Magdeburg, and Berlin. The distances between main points are: Frankfort to Bebra, 103 miles; Bebra to Halle, 131 miles; Halle to Berlin, 100 miles. The road is double tracked throughout, and like all the Prussian State railways, is maintained in excellent condition. There are seven daily through trains in either direction, of which five are express (schnellzüge), and make the run in from ten to ten and a half hours. In summer this time is reduced by two of the trains to nine hours. Modern vestibule trains, with sleeping and day cars of improved types, are run on this and the other leading through routes of Germany.

(2) The second route from Frankfort to Berlin is via Marburg to Cassel, and thence via Halle or Magdeburg to the capital. It is 378 miles in length via Magdeburg; 358 miles via Halle, and the time of through express trains varies from ten to eleven hours. There are six daily trains, of which four are express, the others being of the class known in the United States as "accommodation," which stop at all regular stations.

(3) The route from Frankfort via Hanover to Hamburg and Bremen is the same as the foregoing as far as Cassel, 124 miles. At Cassel the Berlin section of the train is detached, and the remainder continues its run to Hanover, where it is again divided, one section going to Hamburg, the other to Bremen. The entire distance from Frankfort to Hamburg is 338.64 miles; Frankfort to Bremen, 300 miles, and the through express time is from nine and a half to ten hours. There are seven daily through trains, of which four are express, and the sleeping cars on this route are among the best in Germany.

(4) There are two parallel railway routes from Frankfort to Cologne, one traversing each bank of the Main and Rhine. The line on the right bank belongs wholly to the Prussian State system, and passes through Kastel, Rudesheim, Niederlahnstein, and crosses the Rhine at Cologne. The route on the left bank belongs, from Frankfort through Mayence and as far as Bingen, to the Hessische Ludwig's Railway Company, a corporation which controls the railway lines within the territory of the Province of Hesse-Darmstadt, and from Bingen to Cologne it is part of the Prussian system, which has two administrative offices at Cologne, one for the railways on the right, the other for those on the left of the river. The distances are: From Frankfort to Mayence, 20 miles; Mayence to Coblenz, 59 miles; Coblenz to Cologne, 67.7

miles; total, Frankfort to Cologne, 136.7 miles. There are eight daily trains by either route, four of which, on each line, are express, and make the run in about four hours. Tickets either direct or return, are good indiscriminately over either line for all or any part of the distance.

(5) The principal railway route southward from Frankfort is that via Darmstadt, Heidelberg, and Karlsruhe to Basel, on the Swiss frontier whence it is continued by the Central and Jura Swiss lines to Geneva, and via Lucerne, over the St. Gothard route to Italy. The distances are: From Frankfort to Heidelberg, 54.68 miles; Heidelberg to Carlsruhe, 34.17 miles; and from Carlsruhe to Basel, 122.41; total, 211.26 miles. There are six daily through trains, of which four are express, and make the run in from six to six one-half hours. This line belongs, as far as the frontier of Baden, near Heidelberg, to the Hessische Ludwig's Company; thence to Basel, it is a State railway of Baden, built and controlled by the provincial government.

(6) Eastward route from Frankfort to Aschaffenburg, Wurzburg, Nuremberg, and Passau, toward Vienna. This route lies mainly within the territory of Bavaria, and forms part of the Royal Bavarian Railway system. There are eight daily trains from Frankfort to Wurzburg, where the line divides, one branch continuing due eastward through Nuremberg and Passau, where it connects with the Austrian line for Vienna, and the other turning southward to Munich. The distances are: Frankfort to Aschaffenburg, 26 miles; Aschaffenburg to Wurzburg, 55.9 miles; Wurzburg to Nuremberg, 64 miles; Wurzburg to Munich, 124 miles.

All the above lines are double tracked throughout and are of uniform standard gauge. Passenger fares are uniform throughout the entire Prussian State system, and are as follows: First class, 3.09 cents per mile; second class, 2.01 cents per mile; third class, 1.29 cents per mile. These rates are charged in each class for every mile traveled, no discrimination being made in favor of a long as compared with a short trip. The one important concession which is offered is the uniform discount of 25 per cent in the price of return tickets as compared with the cost of two single direct fares over the same route and distance. Thus, if a single direct ticket between two points costs, say, \$10, a return ticket for the round trip would be sold for \$15, that is, \$20, less 25 per cent of that sum. Second-class and even third-class cars are run on most of the express trains, and it is generally conceded that second-class accommodations in Germany are better than in any other European country,

All passenger cars, whatever the class, are lighted with gas and warmed in winter by steam from the locomotive. The car stove is no longer used in Germany except upon small and unimportant local lines.

Railway freight charges are classified under three special schedules or tariffs, numbered respectively, I, II, and III. Each kind of mer-

chandise is charged as freight according to the schedule to which it belongs, under the decision of the German Railway Union, which issues a list in which each kind of goods or material likely to be transported by rail is placed in one of the three schedules above indicated. Thus, wheat and flour are rated as first-class freight; iron plates, machinery, etc., come in the second class, and coal, pig iron, etc., are freights of the third class. The cost per ton for a haul of 1 kilometer is the same in all three classes, but as the distance increases the second and third class freights decline relatively in proportion to the length of haul, so that while a ton of first-class freight carried 1,000 kilometers (621 miles) costs \$10.99, a ton of second class freight carried the same distance costs \$8.61 and a ton of third-class freight, \$5.52. Thus, while a ton of wheat and a ton of coal, representing, respectively, the first and third classes of freights, would each cost 20 cents for the first kilometer, the charges on a ton of wheat for a haul of 500 kilometers (310.7 miles) would be \$5.64, while the ton of coal would be carried the same distance for \$2.92.

The canalized River Main.—As has already been stated, this is the only water route which reaches the city of Frankfort. From Frankfort to Mayence, where the Main flows into the Rhine, the former river was naturally a sluggish stream, about 200 feet in average width, and obstructed by gentle rapids and shallow places which seriously impeded navigation at ordinary or low stages of water. In order to surmount this difficulty and bring Frankfort into practical connection with the navigable Rhine, the lower Main was canalized; that is, its channel was deepened and provided with dams and locks to permit the passage of boats of the Rhine class at ordinary stages of water. The work was begun in 1883, and was finished and opened in October, 1886, at a cost of \$1,309,500. There are four dams with side canals and locks at different points along the 20 miles of river, the locks being 285 feet in length by 35 feet in width, and they secure at low water a minimum depth of 8 feet. The craft which navigate this important water route are mainly the iron freight boats of the Rhine, which are decked barges, with one or two short masts from which sails are spread before a favorable wind, but which depend, when in the Main, upon being towed by small tugs. They bring coal, grain, building materials, and other coarse freights from the lower Rhine, and are largely used for most kinds of export freights which go via Rotterdam and Antwerp.

Rates of transport by this route are as follows:

(1) Downstream: Frankfort to Mayence (20 miles), 6 cents per 100 kilograms (224 pounds); Frankfort to Cologne (126 miles), 12 cents; Frankfort to Rotterdam, 14 to 15 cents per 100 kilograms.

(2) Upstream: Cologne to Mayence, 18.5 cents; Mayence to Frankfort, 7.5 cents; Rotterdam to Frankfort, 34 cents per 100 kilograms.

This is therefore by far the cheapest and most advantageous route for the shipment of heavy freights between Frankfort and the seaboard

Highways.—The public highways throughout Germany are macadamized roads, carefully graded, solidly built, and maintained at Government expense in admirable condition. The construction of most of these highways dates from the period preceding the introduction of railways. Having been carefully and thoroughly built, and being now comparatively little used for heavy hauling over long distances, they are kept in repair at a comparatively trifling cost. They are of three classes, varying from 22.9 to 26.47 feet in width; the slopes of embankments and excavations are turfed and the roadsides are usually lined with poplar, walnut, or fruit trees. In remote country districts, where railways have not yet penetrated, mails and passengers are still carried by diligence, but in this portion of Germany the railways have entirely usurped this function, and there is no longer in this region any highway which serves an important purpose for through travel or traffic.

FRANK H. MASON,
Consul-General.

FRANKFORT, *February 28, 1895.*

LUXEMBURG.

The principal railway lines of the Grand Duchy of Luxemburg are operated and controlled by the German Government (Alsace-Lorraine division). Prior to the conclusion of the Franco-German treaty of May 10, 1871, these lines were controlled by the French Eastern Railway Company. By the Luxemburg-German treaty of June 11, 1872, the control of these lines was ceded to the German Government for the term of years ending December 31, 1912. In article 2 of the treaty, the German Government obligated itself never to use these railway lines for the transportation of troops, weapons, materials of war, or munitions, or otherwise to violate the neutrality of the Grand Duchy.

All the lines which center at the city of Luxemburg are under German control.

The Prince Henri Railway is operated by a private company. Its importance is chiefly local, and therefore it does not appear necessary to allude further to its lines in this report.

In addition to these two important railway systems, there are in the Grand Duchy of Luxemburg two cantonal and two secondary railway lines.

The lines controlled by the Alsace-Lorraine State Railway Department are:

- (1) Luxemburg-Ettelbruck-Ulflingen, connecting at Ulflingen with the Belgian road, via Spa, to Verviers, and the German road, via St. Vith, to Aix la Chapelle.
- (2) Luxemburg-Wasserbillig, connecting at Wasserbillig with the German road, via Trier, to Coblenz.

(3) Luxemburg-Bettemburg (direct line to Metz and Strasburg).

(4) Bettemburg-Esch, connecting at Esch with the Prince Henri road, via Petingen, to Longwy, in France (direct line from Luxemburg to Paris, via Sedan and Rheims).

(5) Longwy-Bettingen, connecting at Bettingen with the Belgian road, via Arlon, to Brussels.

All of these lines have double tracks with exception of the first mentioned, which has a single track, and all are in good condition, but the rolling stock in use does not seem to be as modern as that now used on the great through lines in Germany.

Owing to the smallness of the country, and the absence of important cities, it is useless to discuss in this report local freight rates. The German tariff of through freight rates applies to Luxemburg. As, however, Antwerp is the natural seaport for the Grand Duchy of Luxemburg, and as Luxemburg lies only 11 miles from the Belgian frontier, the Belgian freight tariff is the one which exercises the chief influence upon American commercial relations with the Grand Duchy of Luxemburg. The tables hereto attached give full details in regard to the frequency of communication on each line, distances, speed, and passenger rates.

The William-Luxemburg Railway, operated by the German Alsace-Lorraine State Railway Department.

From Luxemburg to the frontier or terminal station at—	Trains daily.		Time (slow trains).	Dis- tance.	Speed per hour (slow trains).	Passenger rates. <i>a</i>			Average passenger rates per mile.		
	Slow.	Ex- press.				First class.	Second class.	Third class.	First class.	Second class.	Third class.
			Hours.	Miles.	Miles.				Cents.	Cents.	Cents.
Utingen.....	4		2½-2¾	42.8	17-19	\$1.35	\$0.90	\$0.58	} 3½	} 2½	} 1½
Diekirch.....	5		1½	21.5	17	.67½	.46	.29			
Wasserbillig.....	5		1	22.8	22	.72	.47	.32			
Bettemburg.....	9		½-¾	7.1	14-21	.24	.15	.11			
Esch.....	6		¾-1	13	13-17	.43	.29	.18			
Bettingen.....	6	2	b ½	11	c 22	.37	.24	.15			

a Rates for the faster trains are a little higher. The prices of round or return tickets (good for ten days) are: First class—Price of one single first-class ticket plus price of one single third-class ticket. Second class—Price of one single first-class ticket. Third class—Price of one single second-class ticket.

b Express trains, 20 minutes.

c Express trains, 33 miles per hour.

Cantonal railways.

Termini.	Number of trains daily.	Time.	Dis- tance.	Speed per hour.	Passenger rates. <i>a</i>		Average pas- senger rates per mile.	
					Second class.	Third class.	Second class.	Third class.
Diekirch-Vianden <i>b</i>	6	Minutes. 52	Miles. 8.5	Miles. 9½	\$0.27	\$0.18	} 3½	} 2
Nordingen-Martelange.....	3	Hours. 1½-2	18.3	9-10½	.58	.35		

a Prices of return tickets—Diekirch-Vianden: Second class, 43 cents; third class, 27 cents. Nordingen-Martelange—Second class, 93 cents; third class, 58 cents.

b Narrow-gauge road.

Secondary railways (narrow gauge).

Termini.	Number of trains daily.	Time.	Distance.	Speed per hour.	Passenger rates. s		Average passenger rates per mile.	
					Second class.	Third class.	Second class.	Third class.
Luxemburg-Remich	4	Hours. 1½	Miles. 16.9	Miles. 9½	\$0.39	\$0.24	Cents. 2½	Cents. 1½
Cruchten-Fels	5	¾	7.5	11	.20	.12½	2½	1½

a Prices of return tickets: Luxemburg-Remich—Second-class, 58 cents; third class, 39 cents. Cruchten-Fels—Second class, 31 cents; third class, 20 cents.

Prince Henri Railway. (No express trains.)

Line.	Trains daily.	Time.	Distance.	Speed per hour.
Eech-Petingen	5	Hours. ¾	Miles. 10	Miles. 20
Petingen-Ettelbruck	4	2-3	33	11-13
Diekirch-Grevenmacher	5	2-3	34	11-17
Kautenbach-Schimpach	3	¾-1	12	12-16

Passenger rates from the city of Luxemburg to important stations of the Prince Henri Railway.

Station.	First class.	Second class.	Third class.
Petingen	\$0.67½	\$0.48	\$0.32
Bettingen .....	.37	.24	.15
Nardingén .....	.77	.58	.37
Wiltz	1.14	.80	.51
Echternach	1.09	.77	.51
Grevenmacher .....	.77	.53	.34

The prices of round trip or return tickets (good for ten days) are: First class, price of one single first-class ticket, plus price of one single third-class ticket; second class, price of one single first-class ticket; third class, price of one single second-class ticket.

The total mileage of the various railway lines in the Grand Duchy of Luxemburg is as follows:

William-Luxemburg	116
Prince Henri	104
Cantonal lines	27
Secondary lines	25
Total	272

The area of the Grand Duchy of Luxemburg is almost exactly 1,000 square miles. It has, therefore, 1 mile of railway for every 4 square miles of area.

Passenger rates from the city of Luxemburg to important points in other countries.

To—	Distance.	Single tickets. ^a			Round trip or return tickets.			
		First class.	Second class.	Third class.	Number of days good.	First class.	Second class.	Third class.
	<i>Miles.</i>							
Antwerp.....	168	\$4. 97	\$3. 71	.....	4	\$7. 86	\$5. 87	\$3. 89
Baale.....	227	8. 09	5. 70	\$4. 03	3	10. 11	7. 28	4. 71
Berlin.....	486	17. 22	12. 81	8. 97	10	25. 52	18. 91	13. 25
Brussels.....	140	4. 27	3. 18	.....	4	6. 72	5. 02	2. 70
Cologne.....	159	5. 26	3. 79	2. 65	4	7. 43	5. 50	3. 79
Frankfort.....	181	7. 07	4. 63	3. 21	.....	.....	.....	.....
Liege.....	101	3. 43	2. 56	.....	3	4. 84	3. 23	2. 17
Metz.....	41	1. 49	1. 05	.....	3	1. 86	1. 30	. 87
Paris.....	245	8. 42	5. 70	3. 72	6	12. 60	9. 03	5. 98
Strasburg.....	140	4. 98	3. 50	.....	3	6. 83	4. 37	2. 90

^a Prices quoted for fast trains.

Highways.—In addition to its railway network, the Grand Duchy of Luxemburg has another system of traffic channels in its excellent highways, which radiate from the capital town. These highways are of the best class, well constructed, straight, about 40 feet in width, in most cases bordered on each side by rows of trees, which are high and well trimmed. Some of these highways are of Roman origin.

Regular lines of diligences connect the villages and towns which do not enjoy the facilities of railway communication. Though it is, in area, considerably smaller than the State of Rhode Island, the Grand Duchy of Luxemburg has forty-four of these diligence lines. No other country in the world equals Luxemburg in the completeness of its systems of inland communication and intercourse. Every village and isolated house in the country can be conveniently and cheaply reached from the capital town by railway or by diligence, and in each individual case the journey can be begun and finished between sunrise and sunset.

Telegraphs and telephones.—Furthermore, the telephone and telegraph networks are so complete that from the central post-office in the town of Luxemburg it is possible to communicate in either way with persons in any village or hamlet in the country. Many isolated houses in remote districts are, in like manner, connected by telephone with the capital.

GEORGE H. MURPHY,
Vice Commercial Agent.

LUXEMBURG, June 9, 1894.

SWITZERLAND.

The consular district of Switzerland to which I am accredited comprises the Cantons of St. Gall, Graubunden, Thurgau, and Appenzell. The means of communication throughout these cantons consist of railways, wagon roads, and lines of steamers on Lake Constance.

RAILWAYS.

Two lines of road traverse the Cantons of St. Gall, Graubunden, Thurgau, and Appenzell, viz, the Northeastern line and the United Swiss line. Both are owned by private stock companies, but are regulated by the Federal Government.

Northeastern line.—The termini and main points of the Northeastern line,¹ together with distances in miles, are given in the following table:

Isliken (Thurgau boundary station) to Romanshorn.....	28.88
Rorschach to Constance	22.46
Constance to Etzweilen	19.55
Eminshofen to Kreuzlingen.....	0.73
Sulgen to Gossau.....	14.71
Total.....	86.33

The condition of the Northeastern line is perhaps best shown by the items of the table which follows:

Cost of roadbed..... per mile..	\$66,225.35
Value of rolling stock	do.... 11,022.80
Value of furnitures and fixtures	do.... 1,159.12
Total.....	78,407.27

The line carried in the year 1892 (the most recent year for which figures have been obtainable) 8,366,047 persons. Of these, 67,358 were first-class passengers; 1,111,462 second-class, and 7,187,227 third-class. The total income of the road in 1892 was as follows: From passengers, \$1,664,699.97; from freight, \$2,116,153.70. The total cost of administration for the same time was \$555,837.49, which is equivalent to \$6,438.52 per mile.

United Swiss line.—In the case of the United Swiss road,² the termini and main points, together with distances, in miles, are given in the following table:

Aadorf (Thurgau boundary station), Rorschach.....	35.95
Rorschach-Sargans-Chur.....	57
Sargans-Rapperswil.....	36.86
Total.....	129.81

¹ Track is single and of normal width (1.435 meters = 4.7 feet).

² The line is single track and of normal width (1.435 meters = 4.7 feet).

The condition of this line is shown by the following statement:

Cost of roadbed,.....	per mile..	\$74, 603. 15
Value of rolling stock.....	do.....	12, 336. 33
Value of furnitures and fixtures.....	do.....	1, 647. 09

The line carried in the year 1892, 4,266,994 persons, of which 29,677 were first-class passengers; 497,551 second-class, and 3,739,766 third-class. The total income of the road in 1892 was: From passengers, \$714,287.60; from freight, \$844,841.87. The total cost of administration for the same time was \$243,865.34, which is equivalent to \$1,875.80 per mile.

Speed and accommodation.—The maximum speed attained on both lines—the Northeastern and the United Swiss roads—is 60 to 75 kilometers (37½ to 46½ miles) per hour. The cars are plain, but comfortable, and divided into two compartments, a large one for smokers and a small one for nonsmokers. Not all coaches are provided with first-class compartments. The entrances to coaches are by platforms at the ends, as in the United States. The seats are broad and low, upholstered in cloth, and the aisles narrow. The windows are raised and lowered by leather straps. In winter heat is supplied by steam pipes, and a lever for regulating the heat is a feature of each coach. Water-closets, as a rule, are found only in the baggage car.

Passenger rates per mile.

Class.	Northeastern line.		United Swiss line.	
	Single fare.	Round trip.	Single fare.	Round trip.
First.....	<i>Cents.</i> 3. 06	<i>Cents.</i> 2. 14	<i>Cents.</i> 3. 06	<i>Cents.</i> 2. 57
Second.....	2. 14	1. 61	2. 14	1. 85
Third.....	1. 61	1. 20	1. 61	1. 29

Freight rates.—The charges for express freight, so called, are the same on both the Northeastern and United Swiss roads, namely, 70 cents for 1,000 kilos (2,204 pounds), and an additional charge of 6½ cents per 1,000 kilos for shipping expenses. The charges for common freight are also the same on both the above-named roads, namely, 39 cents per 1,000 kilos, and an additional charge of 3½ cents per 1,000 kilos for shipping expenses.

The charges for freight per carload by the Northeastern road are \$2.42 per 5,000 kilos (11,023 pounds), and for amounts greater than 5,000 kilos, \$2.12 per 5,000 kilos.

In the case of the United Swiss road, the charges for freight by the car load are \$2.60 per 5,000 kilos (11,023 pounds), and for greater amounts than 5,000 kilos, \$2.42 per 5,000 kilos. To the above charges there is an addition for shipping expenses of 29 cents per 1,000 kilos.

Rates for long and short hauls in Switzerland are alike.

Neither the Northeastern nor the United Swiss road is characterized by any structures or engineering feats of a noteworthy character. The difficulties overcome were not formidable.

HIGHWAYS.

As constituting the most important of the ordinary highways in this consular district, the post-roads are mentioned. These roads are from 15 to 20 feet in width and are of excellent construction. Their foundation consists of round stones, and their surfaces are made hard and smooth with gravel.

In the case of a limited number of post-roads in Switzerland, the Federal Government exercises control and gives a subsidy towards their maintenance.

The following table gives the post-routes in the four Cantons:

Canton.	Post-roads.	Number of passengers.	Expenses for passengers and luggage.	Receipts from passengers and luggage.
	<i>Miles.</i>			
Appenzell	36½	13,057	\$8,012.37	\$2,422.38
Graubünden	455½	104,874	220,911.03	119,627.78
St. Gall.	119	60,066	34,498.43	14,336.38
Thurgau	67½	16,796	9,270.80	2,781.13
Total	678½	195,393	272,693.63	139,167.67

Passenger rates by post conveyance are 3.2 to 4.9 cents per mile for inside accommodation, and 4.7 to 6.44 cents per mile for coupé or banquette. Return tickets, good for three days, are sold at a discount of 10 per cent. Alpine routes command higher prices, i. e., 8 cents for inside accommodation and 9.7 cents for coupé or banquette. Each passenger may take with him 30 pounds of luggage free of charge.

LAKE NAVIGATION.

Steamboat lines on Lake Constance.—These lines belong to the North-eastern Railway Company, which has an office of control at Romanshorn. The courses run by the steamers and the distances between the stopping points are:

From—	To—	Miles.	From—	To—	Miles.
Romanshorn	Arbon	5	Romanshorn	Bregenz	17½
Arbon	Rorschach	3½	Romanshorn	Friedrichshafen	7½
Rorschach	Lindau	10½			
Lindau	Bregenz	3½	Total		61½
Romanshorn	Lindau	14½			

Steamers running on the lake.

Name.	Boilers.	Horse-power.	Name.	Boilers.	Horse-power.
Helvetia	2	500	Santis	2	400
Zürich	2	350	Thurgau	2	350
Bodan	2	250	St. Gallen	1	200

The average speed of the steamers is about 12½ miles per hour. The vessels themselves are well built and fitted out. In the year 1893 they carried 114,423 passengers, 281 tons of baggage, 6,647 head of

live stock, and 150,874 tons of freight. The average expenses for the year 1893 were 3,533 francs per kilometer (\$1,087.51 per mile). Transportation rates per mile on these steamers are:

Passengers.—Single fare, first and second class, 3.4 cents and 2.08 cents; round trip, 4.9 cents and 3.2 cents. Baggage, 2.4 cents per 220 pounds.

Live stock.—Horses and mules, 8 cents per head; oxen and cows, 6.44 cents; heifers, asses, and colts, 3.4 cents; hogs, 2.08 cents; calves, sheep, and goats, 1.2; dogs, accompanying owners, one-half cent.

Freight rates.—The freight rates are: Express freight from Romanshorn-Bregenz, 18 cents per 220 pounds. The charges are the same between any other points on the lake. Common freight, by quantity or car load, is carried for 3 to 9 cents, according to class and distance, per 100 kilos (220 pounds).

IRVING B. RICHMAN,
Consul-General.

ST. GALL, *November 18, 1894.*

AUSTRIA-HUNGARY.

AUSTRIA.

The principal railroad lines of Austria lead to Vienna. They are all included in this report except the Nord West Bahn, which has been reported upon by the consul at Prague, and the lines to Budapest, which cross the Hungarian frontier a short distance from Vienna.

The only important ocean lines of this country are the Austrian Lloyds and the Hungarian Company (Adria).

The Danube Steamship Company has so many special tariffs, depending on the amount of freight and various other special conditions, that no clear idea thereof could be conveyed, without tables too numerous and complicated for this report.

The railroads, steamship companies, and highways of Austria are under the control or closely supervised by the Government. Although the tendency in Austria is to be somewhat conservative, as regards the adoption of new ideas, the public ways of communication are, on the whole, ably and economically managed. Travel is not as rapid as in the United States, but on the other hand there are fewer accidents. The Government is held more or less responsible by public opinion for the accidents that occur, and as labor is very cheap it is not surprising that the railroads are carefully built and closely watched. Where the more frequented highways are crossed by railroads, the tracks are, as a rule, either above or below the level of the road.

NAVIGABLE RIVERS AND CANALS.

The Danube, with its tributaries and canals, is the only important means of communication by river in Austria and Hungary. Its traffic

is controlled by the K. k. Privat-Donau-Dampfschiffahrt-Gesellschaft, a private company receiving a subvention from the Imperial Government of \$100,000 yearly. Its vessels ply from Regensburg, Bavaria, the head of navigation on the Danube, to Sulina, on the Black Sea, on the various arms into which the river divides before emptying into the sea; and on the Vienna, Danube, Bjelina, Georges, Borca, and Gura-Balja canals, a total distance of 2,775 kilometers (1,417 miles); also, on the River Drau from the town of Barcs to its mouth, a distance of 151 kilometers (94 miles); on the Theiss, from the town of Csega to its mouth, a distance of 489 kilometers (285 miles); on the Franz-Joseph Canal, a distance of 187 kilometers (116 miles); on the Bega Canal, 115 kilometers (71 miles); on the Save from Goldova to its mouth, and on the tributaries of the Save, together a distance of 686 kilometers (426 miles); on the Black Sea from Sulina to Odessa, and from Sulina to Batoum. The total distance traversed by the various lines of this company is 5,637 kilometers (3,563 miles).

The most important stations on the Danube are Regensburg, Passau, Linz, Vienna, Pressburg, Budapest, Belgrade, and Orsova.

At the commencement of the year 1893 the company owned 156 side-wheel steamers of 15,131 horsepower, 25 propellers of 872 horsepower, and 766 iron boats with a tonnage of 2,805,624.

There is daily communication between Vienna and Passau, a steamer leaving each city every morning.

There is also a daily boat between Vienna and Orsova and Orsova and Vienna, and between Vienna and Pressburg. These vessels, which carry passengers, stop at all the small stations on the route. Besides the regular passenger steamers, there are numerous freight steamers running irregularly.

The fare, first class, from Vienna to Passau is \$1.60, and downstream from Passau to Vienna \$2.68. The fares to the most important places between Vienna and Orsova are:

Ports.	Up.	Down.	Ports.	Up.	Down.
Vienna to Pressburg	\$0. 72	\$1. 80	Belgrade to Orsova	\$1. 84	\$4. 60
Pressburg to Budapest.....	1. 48	3. 70	Vienna to Orsova.....	6. 28	15. 70
Budapest to Belgrade.....	2. 24	5. 60			

In the year 1892 the total receipts of the company were \$4,157,946, and its net profits were \$240,530.

The Elbe is only navigable for a short distance in Austria, but is of importance to American merchants, as one of the cheapest ways to send freight to Austria is to ship to Hamburg and then send the goods by the Elbe to Bohemia.

RAILWAYS.

The K. k. Südbahn-Gesellschaft.—The Südbahn Railway is controlled by a private company which received its first concession from the Government in the year 1858. The whole line is to be bought partly

by the Austrian and partly by the Hungarian Government in the year 1895. The business done during the seven preceding years is to regulate the price of the railroad. It is for this reason that separate accounts have been kept for the part of the line running through Austria and the part running through Hungary.

The principal line belonging to this company runs southward from Vienna through Graz, Marburg, and Laibach to Trieste, with an extension from Trieste to Fiume.

The distance from Vienna to Graz is 228 kilometers (143 miles); from Graz to Marburg, 65 kilometers (40 miles); from Marburg to Laibach, 155 kilometers (96 miles); from Laibach to Trieste, 146 kilometers (91 miles), and from Vienna to Trieste, 594 kilometers (369 miles).

The condition of the line is the same as that of other Austrian lines. It is well and solidly built, and kept in excellent order. The cross-ties are of pine wood and are embedded in stone ballast. In the way of rolling stock, there were 665 locomotives, 622 tenders, 14 water wagons, 1,470 passenger cars, and 1,229 freight cars at the commencement of the year 1893. With a total net of 2,178 kilometers belonging to the company and 375 kilometers of rented lines, the receipts were \$16,464,566; the expenditures, \$8,908,642; making a net profit of \$7,556,924.

The Südbahn is a double-track line the entire distance between Vienna and Trieste. This route is through a mountainous country, and the grades are often steep, especially at the Semmering Pass.

Two through express and two through accommodation trains leave Vienna for Trieste and Trieste for Vienna daily.

The passenger rates are in accordance with distance. The fare from Vienna to Trieste is, first class, 24.15 florins, or \$9.66; Vienna to Graz, \$4.12; Graz to Marburg, \$1.24; Marburg to Laibach, \$2.38; Laibach to Trieste, \$1.62.

The K. k. Ferdinand-Nordbahn line.—The Nordbahn Railroad, which belongs to a private company, has a concession from 1886 to 1940, but is to be bought by the Government after the 1st of January, 1904. The main line is between Vienna and Cracow; it passes through no cities of any size, but connects with the Russian railroads on the frontier.

The length of the line from Vienna to Cracow is 413 kilometers (256.6 miles). It has double tracks and is in good condition. As the country through which it runs is, for the greater part, flat, there have been no engineering difficulties of importance to contend with in constructing the track.

Three express and two accommodation trains leave Vienna daily for Cracow, and two express and three accommodation trains make the return trip. The price, first class, from Vienna to Cracow is \$5.40.

In the year 1892 the company of the Nordbahn had under its control 1,321 kilometers (820.8 miles) of tracks, spent \$6,849,721, earned \$12,223,475, and made a net profit of \$5,374,754.

Oesterreichische Ungarische Staats-Eisenbahn-Gesellschaft.—The main line of this railroad is between Vienna and Bodenbach, and passes through Brunn and Prague. It connects with the German line running to Dresden. The Staats-Eisenbahn-Gesellschaft belongs to a private company and the Hungarian Government, the company owning such parts of the line as are in Austrian territory. The Austrian Government will be able to buy such parts of this railway system as belong to the company after the 1st of January, 1895.

The main line from Vienna to Bodenbach is 540 kilometers (335.6 miles); i. e., from Vienna to Brunn, 156 kilometers (97 miles); from Brunn to Prague, 254 kilometers (158 miles), and from Prague to Bodenbach, 130 kilometers (81 miles).

The line has a single track from Vienna to Brunn and a double track from Brunn to Bodenbach.

There are one express and two accommodation trains daily from Vienna to Bodenbach, and two express trains that go from Vienna to Brunn, on the Ferdinand-Nord-Bahn, and then by the double-track line of the Eisenbahn-Gesellschaft to Bodenbach. From Bodenbach to Vienna there is one express train less than in the opposite direction.

The fare from Vienna to Bodenbach, first class, is \$6.12; from Vienna to Brunn, \$1.80; from Brunn to Prague, \$2.40; from Prague to Bodenbach, \$1.92. With a net total of 1,365 kilometers (838 miles) the Oesterreichische-Ungarische Staats-Eisenbahn-Gesellschaft earned \$9,362,046 and spent \$3,930,563, making net profit of \$5,431,483.

K. k. Oesterreichische Staatsbahnen.—The Austrian State line from Vienna to Salzburg was built by a private company with a government guaranty, and was known as the Kaiserin-Elisabeth or Westbahn. In 1880 it and all the lines belonging to the Westbahn-Gesellschaft were purchased by the Austrian Government.

Its termini are Vienna and Salzburg, while the one place of importance through which it passes is Linz.

The total length of the line is 314 kilometers (195 miles), viz: From Vienna to Linz, 189 kilometers (117 miles), and from Linz to Salzburg, 125 kilometers (78 miles).

From Vienna to Wels, a distance of 213 kilometers (132 miles), there is a double track, but through the mountainous country between Wels and Salzburg there is only a single track. It is between Wels and Salzburg that the greatest difficulties in constructing the line were encountered, the Aralberg tunnel, in particular, being a masterpiece of engineering.

There are one accommodation and two express trains from Vienna to Salzburg, and one express train passing through Salzburg on the way from Vienna to Zurich. From Salzburg to Vienna there are two daily express and three accommodations trains besides the through trains from Vienna to Zurich.

With the exception of a few small lines the fares on all the Government railroads are regulated by distance, the fare being about 18 cents for every 10 kilometers (6.2 miles) or fraction thereof on an express train, first class, and about 12 cents, first class, on an accommodation train. On most of the Austrian railroads the second-class fare is two-thirds of the first, and the third class a fraction higher than one-third of the first class.

Freight classification in force on the most important Austrian railroads.

Articles.	Südbahn, Nordbahn, and Staats-Eisenbahn-Gesellschaft.			K. k. Oesterr. Staatsbahnen. ¹		
	Under 5,000 kilo-grams.	5,000 kilo-grams.	10,000 kilo-grams.	Under 5,000 kilo-grams.	5,000 kilo-grams.	10,000 kilo-grams.
Waste of sheep wool.....	II.	II.	II.	II.	A. T., IVa.	A. T., IVb.
Cotton:						
Raw and waste.....	II.	A.	A.	II.	A.	A. T., IVc.
Common.....	II.	A.	A.	II.	A.	A. T., IVa.
Lead.....	II.	A.	B.	A.	A.	B.
Brandy, rum, cognac.....	II.	A.	A.	A.	A.	A. T., IVc.
Cut metal.....	II.	A.	A.	II.	A.	A. T., IVc.
Steam boiler up to 6.3 meters.....	II.	A.	B.	A.	B.	R.
Wire.....	II.	II.	II.	II.	A. T., IVa.	A. T., IV. B.
Iron and steel.....	II.	A.	B.	A.	B.	B.
Iron and steel ware.....	II.	A.	A.	A.	B.	B.
Iron and steel, raw.....	II.	A.	A.	B.	B.	C.
Mineral colors in bags.....	II.	A.	C.	II.	A.	C.
Ore.....	II.	A.	² B.	II.	A.	B.
Dyeing wood, all sorts of.....	II.	A.	A.	II.	A.	A. T., IVc.
Skins, raw, salted, and dried.....	II.	A.	B.	II.	A.	B.
Tallow, etc.....	II.	A.	B.	II.	A.	B.
Flax.....	II.	A.	C.	II.	A.	C.
Yarn:						
Single.....	II.	A.	A.	II.	A.	A. T., IVc.
Two or more twisted together.....	II.	II.	II.	II.	A. T., IVa.	A. T., IVb.
Tanning materials.....	II.	A.	B.	II.	A.	B.
Corn and pulse.....	A.	A.	¹ I.	A.	A.	¹ I.
Skins, raw and salted.....	II.	A.	A.	II.	A.	A. T., IVc.
Wood:						
Logs, boards.....	II.	A.	A.	II.	A.	A. T., IVc.
Stem staves.....	II.	A.	² B.	II.	A.	² B.
Leather, etc.....	II.	II.	II.	II.	A. T., IVc.	A. T., IVb.
Linen goods.....	II.	A.	A.	II.	A.	A. T., IVc.
Locomotives.....			C.			B.
Machines, agricultural.....	II.	A.	B.	II.	A.	B.
Metal.....	II.	A.	A.	II.	A.	A. T., IVc.
Furniture, bent wood.....	II.	II.	II.	II.	A. T., IVa.	A. T., IVb.
Oils, etc., in barrels.....	II.	A.	A.	II.	A.	A. T., IVc.
Oil, mineral.....	II.	A.	A.	II.	A.	A. T., IVc.
Flows.....	II.	A.	B.	II.	A.	A. T., IVc.
Bags:						
Used.....	¹ I.	¹ I.	¹ I.	¹ I.	¹ I.	¹ I.
New.....	A.	A.	A.	A.	A.	A. T., IVc.
Roemakers' goods.....	II.	A.	A.	II.	A.	A. T., IVc.
Tobacco, raw.....	II.	A.	A.	II.	A.	A. T., IVc.
Sugar, all sorts of.....	II.	A.	A.	II.	A.	A. T., IVc.

¹ Special tariff of the Imperial Postal Staatsbahn, in kreutzers per 100 kilograms (≈20.46 pounds) per kilometer (0.621376 mile).

Distances.	IVa.	IVb.	IVc.
	5,000 kilos.	10,000 kilos.	10,000 kilos.
	<i>Kreutzers.</i>	<i>Kreutzers.</i>	<i>Kreutzers.</i>
From 1 to 50 kilometers.....	0.45	0.40	0.33
From 51 to 150 kilometers.....	.40	.35	.26
From 151 to 300 kilometers.....	.35	.30	.22
Over 300 kilometers.....	.26	.22	.18

² Special tariff.

Rates for fast and ordinary freights on the Austrian railroads.

[In kreutzers (a) per 100 kilograms (220.40 pounds).]

From or to Vienna	Kilometers	Fast freight.		Slow freight.								
		Ordinary.	Reduced	Class.		Car-lading class.			Special tariff.			
				I	II	A	B	C	1	2	3	
Imperial Royal Southern Railroad, Vienna to Trieste:		<i>Kreut.</i>	<i>Kreut.</i>	<i>Kreut.</i>	<i>Kreut.</i>	<i>Kreut.</i>	<i>Kreut.</i>	<i>Kreut.</i>	<i>Kreut.</i>	<i>Kreut.</i>	<i>Krt.</i>	<i>Krt.</i>
Gratz.....	224	248	233	208.5	139	106.5	89	53	43.5	66	59	40
Marburg.....	290	318	289	271.5	181	136	110	65.5	52	83	74.5	47
Laibach.....	445	468	351	406.5	271	196	147.5	92.5	70	119	108	62
Trieste.....	584	608	407	532.5	355	252	178	118	86.5	152.5	119.5	76
Imperial Royal Emperor Ferdinand Northern Railroad, Vienna to Cracow:												
Preran.....	184	304.4	112.6	168.8	112.6	96	68.6	53.8	34.6	47.8	35.6	31.1
Mahr-Ostrau.....	268	438.8	162.1	243.2	162.1	138	95.8	74.3	43.3	64.6	44	38.4
Oderberg.....	276	451.6	166.8	250.2	166.8	142	98.3	76.2	44.1	66.2	44.8	39.1
Cracow.....	418	620	247.7	371.5	247.7	187.9	134.6	104.1	57.8	91.1	60.3	50
Imperial Royal Austrian State Railroad, Vienna to Salzburg:												
St. Polten.....	61	86	43	.....	43	36	27	20	17	21	17	15
Amstetten.....	125	156	78	.....	78	64	44	33	26	35	26	23
Steyr.....	185	224	112	.....	112	90	60	44	33	47	38	29
Linz.....	189	224	112	.....	112	90	60	44	33	47	38	29
Wels.....	213	256	128	.....	128	102	67	50	37	53	37	32
Salzburg.....	314	368	184	.....	184	143	91	67	47	72	47	41
Austro-Hungarian State Railroad, Vienna to Bodenbach:												
Brunn.....	.....	240.4	89	181.9	89	68	55	43.4	29.8	39.7	32	29.1
Zwittau.....	.....	396.9	153.7	196.6	138.9	102.3	88.6	74.5	51.2	69	53.9	36.5
Bohm-Trubau.....	.....	430.6	166.4	209.7	149.4	108.9	93	79.6	51.2	72.2	53.9	38.1
Chozen.....	.....	480.1	188.1	230.2	164.9	119.1	99.5	88	51.5	77.2	53.9	40.6
Pardubitz.....	.....	547	210	240	180	133	108	92	51.5	80	53.9	43.9
Kolin.....	.....	570	210	240	180	141	110	92	51.5	80	53.9	47.3
Prague.....	.....	570	210.5	294	200	158.2	122	94	53.3	83	55.9	52.3
Kralup.....	.....	623.5	232.6	299	216	169.3	126	97.7	55.8	86	58.2	54.5
Aussig.....	.....	761	290	339	228	198	142	115	65.7	97.1	68	60.9
Bodenbach.....	.....	783	304	343	240	200	145	119	69.4	101	72.4	62.7

a The vice-consul-general values the florin at 40 cents; 100 kreutzers, therefore, equal 40 cents American, 1 kreutzer equals two-fifths of a cent.

HIGHWAYS.

The imperial highways were built before railroads were in use, and are splendid examples of how to build good roads. They are also very well kept. They run from Vienna to every city in Austria, the other cities being connected by roads maintained by the counties or towns through which they pass. The imperial highways, which are macadamized, are maintained by the Imperial Government and have a width of 10 meters (32.8 feet).

DEAN B. MASON,
Vice-Consul-General.

VIENNA, July 7, 1894.

BOHEMIA.

RAILWAYS.

The railways of Bohemia are controlled either by the State, called "Staatsbahnen" (State railways), or by private corporations or stock companies, and called "Privatbahnen" (private railways).

State railways.—The main State railway is the K. k. Oesterreichische Staatsbahn (Imperial Royal Austrian State Railway). It starts from Vienna, Austria, and runs to Prague, Bohemia. The length of this road is 350 kilometers (217 miles); touching Gmuend, a distance of 164 kilometers (102 miles); Tabor, 82 kilometers (51 miles); Beneshow, 53 kilometers (33 miles), and Prague, 51 kilometers (32 miles). Over this route are running one limited and four express trains daily, each way. Another line runs from Gmuend to Eger, touching Budweis, a distance of 50 kilometers (31 miles); Pilsen, 135 kilometers (94 miles); Marienbad, 76 kilometers (47 miles), and Eger, 30 kilometers (18.6 miles). The length of this line is 283 kilometers (175.8 miles). At Eger it connects with a Bavarian railway which leads to Mannheim, Paris, etc. Two limited and three express trains run daily each way over this line.

Private railways.—The main private railways are:

The Böhmische Westbahn (Bohemian Western Railroad) runs from Prague to Brod, in Bavaria, a distance of 191 kilometers (118.5 miles), viz: Beraun, 39 kilometers (24.2 miles); Pilsen, 71 kilometers (44.1 miles); Taus, 59 kilometers (36.6 miles), and Brod, 22 kilometers (13.6 miles). This company runs one limited and three express trains daily, going and coming. At Brod it connects with a Bavarian railway that runs to Munich, etc.

The Buschtehrader Bahn (Buschtehrad Railway) starts from Prague and runs to Eger, a distance of 241 kilometers (149.7 miles), viz: Kladno, 32 kilometers (19.9 miles); Saaz, 74 kilometers (45.9 miles); Komotau, 23 kilometers (14.3 miles); Carlsbad, 60 kilometers (37.3 miles), and Eger, 52 kilometers (32.3 miles). At Eger (the terminus) it connects with German railways that run to Frankfort, and to the seaports of Rotterdam and Amsterdam. Two limited and two express trains run daily each way.

The Oesterreichische Nordwestbahn (Austrian Northwestern Railroad) runs from Tglau to Tetschen, a distance of 259 kilometers (160.9 miles), viz: Tglau to Caslau, 80 kilometers (49.7 miles); Caslau to Kolin, 20 kilometers (12.4 miles); Kolin to Nimburg, 24 kilometers (14.9 miles); Nimburg to Leitmeritz, 84 kilometers (52.2 miles), and Leitmeritz to Tetschen, 51 kilometers (30.7 miles). At Tetschen it connects with Saxon railways, which run to Dresden, Leipzig, Berlin, and the seaports of Hamburg and Bremen. Two limited and four express trains run daily both ways.

The Oesterreich-Ungarische Staatseisenbahn (Austro-Hungarian State Railroad) runs from Bøhmische Truebau to Bodenbach, a distance of 294 kilometers (182.7 miles), viz: From Bøhmische Truebau to Pardubic, 59 kilometers (36.6 miles); Pardubic to Kolin, 43 kilometers (26.8 miles); Kolin to Prague, 62 kilometers (38.5 miles); Prague to Ausig, 107 kilometers (66.5 miles); Ausig to Bodenbach, 23 kilometers (14.3 miles). At Bodenbach it connects with German railways, which run to Dresden, Berlin, Hamburg, and Bremen. Three limited and four express trains run both ways over this line daily.

The Bøhmische Nordbahn (Bohemian Northern) starts from Prague and runs to Rumburg, a distance of 190 kilometers (118 miles), viz: Prague to Yung Bunzlau, 88 kilometers (54.7 miles); Yung Bunzlau to Bøhmische Lipa, 58 kilometers (36 miles); Bøhmische Lipa to Rumburg, 44 kilometers (27.3 miles). At Rumburg it connects with a German railway which runs to Berlin, etc. One limited and two express trains run daily on this road.

CONDITION OF THE RAILROADS.

All the railroads have single tracks, except the Austro-Hungarian State Railroad, which has a double track. The condition of the railroads in this country is exceptionally good. The tracks are laid with heavy steel rails, on oaken or pine cross-ties, imbedded in stone ballast. Bridges are of stone or steel. The tracks are kept in a clean and sound condition. Every railway company has watchmen distributed along its line, 1 kilometer (0.621347 mile) apart. Each watchman is supplied with a comfortable brick cottage, which is built beside the track, where he resides with his family. His duty is to take care of his section of roadway and keep it in good order. No grass is allowed to grow on the road, nor is any person, except railroad officials, allowed to walk on the track, unless a special permit has been obtained from a proper officer; consequently one does not hear of persons being run over by locomotives, unless it be a case of intentional suicide. Each watchman is obliged to walk over his division every time before a passenger train passes over, and to examine the rails carefully. No obstacles worthy of special mention, in grades, bridges, etc., had to be overcome in the construction of railroads in Bohemia.

PASSENGER RATES.

The passenger traffic is regulated here by the zone system (Zonen-tarif), which divides travel into several classes, called zones. For one or more of these zones tickets are issued that entitle a passenger to travel from the starting place either to the end of the zone or to any point within that zone. The fast and express trains carry cars of three classes. The accommodation trains carry two classes, second and third. Each passenger car is divided into compartments. The cars of the first class are divided into three compartments, each compartment

for six persons. The seats are upholstered and covered with plush. Cars of the second class are divided into four compartments, each compartment for eight persons; the seats are upholstered and covered with leather. Cars of the third class are divided into five compartments, each compartment for ten persons. The cars have plain wooden seats.

The following table shows the division into zones and the fares:

Number of zone.	Kilometers.	Express trains.			Fast trains.		
		First class.	Second class.	Third class.	First class.	Second class.	Third class.
		Florins.	Florins.	Florins.	Florins.	Florins.	Florins.
1	1 to 10	0.30	0.20	0.10	0.45	0.30	0.15
2	11 20	.60	.40	.20	.90	.60	.30
3	21 30	.90	.60	.30	1.35	.90	.45
4	31 40	1.20	.80	.40	1.80	1.20	.60
5	41 50	1.50	1.00	.50	2.25	1.50	.75
6	51 65	1.95	1.30	.65	2.93	1.95	.98
7	66 80	2.40	1.60	.80	3.60	2.40	1.20
8	81 100	3.00	2.00	1.00	4.50	3.00	1.50
9	101 125	3.75	2.50	1.25	5.63	3.75	1.88
10	126 150	4.50	3.00	1.50	6.75	4.50	2.25
11	151 175	5.25	3.50	1.75	7.88	5.25	2.63
12	176 200	6.00	4.00	2.00	9.00	6.00	3.00
13	201 250	7.50	5.00	2.50	11.25	7.50	3.75
14	251 300	9.00	6.00	3.00	13.50	9.00	4.50

NOTE.—The vice-consul-general estimates the value of the florin at 40 cents.

The average rate per kilometer (0.621376 mile) on express trains is $3\frac{3}{4}$ kreutzers¹ in first class, $2\frac{1}{2}$ kreutzers in second class, and $1\frac{1}{2}$ kreutzers in third class; and on fast trains, 5.35 kreutzers in first class, $3\frac{1}{2}$ kreutzers in second class, and $1\frac{3}{4}$ kreutzers in third class. Children from 2 to 10 years old pay half price. No allowance is made for luggage except what a person can take comfortably into the compartment.

FREIGHT RATES.

Freight rates on short hauls are charged on the same basis as the through traffic rates. For instance, over the Austro-Hungarian State Railway, from Boehmische-Truebau to Bodenbach, a distance of 294 kilometers (182.7 miles), the through rates are 15 florins (\$6) per ton of first-class goods, such as wool, cotton, etc; for second class, such as hides, woodenware, etc, 11.40 florins (\$4.56), and for third-class goods, such as grain, 8.18 florins (\$3.27); for wood, 6 florins 39 kreutzers (\$2.56); for stone, 6 florins 10 kreutzers (\$2.44).

To find the charge for a ton of first-class freight shipped to some intermediate point, say from Boehmische-Truebau to Pardubic, 59 kilometers (36.7 miles), we have only to apply the ratio of 15 florins (\$6) for 294 kilometers (182 miles), the through rate, to the 59 kilometers to reach the charge for a ton of first-class freight for the latter distance, viz, 2.95 florins (\$1.18).

¹ Kreutzer equals two-fifths of a cent.

MACADAMIZED HIGHWAYS.

These roads are of three kinds, imperial, county, and town or local highways. The imperial roads are supervised and kept at the expense of the Empire. They run continuously through one State into another, and always lead to the imperial capital, Vienna. The county roads are built and kept up by the county governments. Bohemia is well supplied with such roads, which lead in every direction. According to the statistics there are at present 4,293 kilometers (2,668 miles) of imperial roads; 17,852 kilometers (11,093 miles) of county roads, and 4,878 kilometers (3,031 miles) of town roads; total, 27,023 kilometers (16,792 miles), of macadamized highways in Bohemia. The width of the imperial and county roads is 10 meters (32.87 feet); of the town roads, 9 meters (27.86 feet). They are kept in a very good condition. Permanent roadmasters are employed. The law prescribes that to each roadmaster not less than 2,800 yards of the road shall be assigned, and that he shall be on the road every day in the year and take care of his section. Each government supplies the roadmasters, usually in the fall, with broken stone or gravel, which is distributed in small heaps about 50 feet apart alongside the road, for repairs.

NAVIGABLE RIVERS.

There are two navigable rivers in Bohemia, the Elbe and the Moldau. The Elbe flows in a northwesterly course through Bohemia into Saxony; thence to the seaport of Hamburg, emptying into the North Sea. Only small steamers ply on the Elbe in Bohemia, commencing at Melnik. These are mainly employed in towing canal boats, loaded with freight.

The River Moldau flows from the southern part of Bohemia directly north, passing through the city of Prague, and emptying into the River Elbe, at Melnik. On this river only rafts and canal boats are used. Navigation on the River Moldau, from Budweis to Melnik, is 220 kilometers (136.7 miles), and that of the river Elbe, from Melnik to Hamburg, is 610 kilometers (379 miles). Canal boats on the Moldau carry, on an average, 200 tons, and on the Elbe, from 400 to 600 tons.

The freight charges from Prague to Hamburg per ton of sugar are 8 marks (\$1.904); on grain, including insurance, 8 marks; on carpet wool, including insurance, 19 marks (\$4.52). Rates are made according to the kind of goods.

JOHN KAREL,
Consul.

PRAGUE, *June 9, 1894.*

HUNGARY.

RAILWAYS.

The most important railway lines in Hungary, in connection with international traffic, are: (1) The Royal Hungarian State railways (Die königl. ungar. Staats Eisenbanen); (2) The Imperial and Royal Incorporated Southern Railway (Die k. u. k. priv. Südbahn); and (3) The Imperial and Royal Incorporated Kaschau-Oderberg Railway (Die k. u. k. priv. Kaschau-Oderberg-Bahn). The first of these is owned and managed by the State; the two latter are private corporations.

The Royal Hungarian State Railways, besides attending largely to the local traffic, both passenger and freight, are auxiliary to the international traffic between Hungary and France, Switzerland, southern Germany, western Germany, eastern Germany (partly), Belgium, Holland, the northern seaports, the East, mainly the Balkan States, and, finally, the international traffic by the seaports of Fiume and Triest.

The Hungarian railway stations connecting with the traffic from abroad are Gyanafalva (Fehring) for the south; Bruck and Marchegg for the southwest and partly the north; Ruttka and Csacza for the north and northeast and Fiume for the Adriatic traffic. The terminal stations of departure for the East (Balkan States) are Predial, Vercierova and Zimony (Semlin). Mention should also be made of the traffic to and from Russia by the transit stations Beskid and Vidrany, and further in connection with the Bosnian traffic as far as the Adriatic seaport of Metkovitz, of the transit station Brod, respectively Bosna-Brod.

The main lines and more important intermediate stations are Marchegg-Predial, with the terminal station Marchegg on the Austrian frontier; the intermediate stations, Pozsony (Pressburg), Budapest, Czegled, Nagy-Varad (Gross-Wardein), Brasso (Kronstadt), and the transit station, Predial; for the traffic by Orsova (Vercierova), the stations, Pozsony (Pressburg), Szeged (Szegedin), Temesvar, Orsova; for the traffic in the direction of Servia, Bulgaria, etc., the station Bruck-Marchegg, on the Austrian frontier, and the intermediate stations, Gyor (Raab), Szabadka (Maria-Tereziopel), Ujvidek (Neusatz), Zimony (Semlin); for the Adriatic traffic, Fiume, Agram, Dombovar, and Budapest. The traffic in the opposite direction passes through the same stations. As to the Russian traffic, it is effected partly by land and partly by sea through the Adriatic seaport of Fiume.

The distances between the terminal stations of the main lines are as follows:

Terminals.	Distance.	
	Kilometers.	Miles.
Budapest-Predial.....	761	472.88
Marchegg-Budapest, Budapest-Orsova.....	729	453
Bruck (on the Leithe River)-Budapest, Budapest-Semlin.....	588	358.95
Budapest-Fiume.....	604	375.54
Uj-Dombovar-B. Brod.....	274	190.26
Budapest-Beskid.....	444	276.90
Budapest-Vidrany.....	406	251.08

The Imperial and Royal Incorporated Southern Railway, as well as the Imperial and Royal Kaschau-Oderberg Railway, runs in both Austria and Hungary, the headquarters of the former being in Vienna, with a managing directory in Budapest, and the headquarters of the latter in Budapest, and managed from there. The management of both of these railways is subject to the supervision of the Hungarian as well as of the Austrian authorities.

The Southern Railway international traffic is conducted as follows: Budapest, from which the Italian traffic is effected, via Kanizsa Comons, Kanizsa-Pontaffel, and Ala (Peri); the Swiss traffic, via Kanizsa-frauzensfesta-Innsbruck, and in part, Kanizsa, Oedenburg, and Vienna; the Adriatic traffic, via Kanizsa, Steinbruck, and Trieste. The lengths of these lines operated in Hungary are:

From—	To—	Distance.	
		Kilometers.	Miles.
Budapest.....	Kanizsa	221	137.33
Kanizsa.....	Pragerhof	109	67.73
Kanizsa.....	Becsujhely (Wiener Neustadt).....	114	70.84
Zagrab (Agram)	Steinbruck	76	47.23

The Imperial and Royal Kaschau-Oderberg Railway is important, mainly, as a transit railway for international traffic. It connects at Oderberg with the Prussian state railways and the Kaiser-Ferdinand's Northern Railway (Nordbahn), and crosses over into Hungary at Csacza, where it effects a junction with the Russian, east German, and Galician traffic.

Ruttka is a branch station for the traffic to Hungary, Roumania, and Servia. From Ruttka it runs as far as Abos, and a branch line runs from Abos to Orlo, on the Galician frontier.

The terminal station of the main line of the Kaschau-Oderberg railway is Kaschau, from which point the Hungarian railways operate various lines to the southeast and northeast. The Kaschau-Oderberg railway is also of importance for tourists. Its route passes through the most beautiful scenery of the Carpathian Mountains, and is dotted all along the line with charmingly situated and much frequented watering places, which are every year the rendezvous for thousands of people in search of either health or pleasure. These resorts are Csorba, Lucsivna, Poprad Felka, Tatva-Fured, Iglo, Lublo, and Bartfeld, which is reached by a branch railway from Abos. The length of these lines is: Kaschau-Oderberg, 351 kilometers (218 miles); Abos-Orlo, 87 kilometers (54 miles); Kaschau-Abos, 15 kilometers (9.3 miles).

The foregoing lines are first class. The rolling stock, roadbed, etc., are in fair condition, and collisions and accidents are of rare occurrence. There are double tracks on the lines of the Royal Hungarian State railways from Marchegg as far as Czegled, Budapest, Hatvan, and

Lawoczne. The remaining lines of the State railways, as well as of the Southern and Kaschan-Oderberg railways, are single track. The width of the tracks of all these lines is 1.435 meters (4.7 feet).

Railway zone tariffs.—The rates for passenger traffic in Hungary on all the lines, except the Imperial and Royal Incorporated Southern Railway, are fixed by the so-called zone tariff.

Budapest forms the nucleus or starting point in this respect for the Royal Hungarian State railways in such a way that a passenger for a trip from any given part of the country which would pass through Budapest to another part of the country would be charged separate fares, according to the zone tariff rates from Budapest. To illustrate: If a person undertook a trip from the western frontier, starting from the station Bruck, to Budapest and from Budapest to Orsova, the rates under the zone tariff are fixed under two heads: First, the so-called local traffic for shorter distances, with two zones, 1 and 2; and second, the through traffic for longer distances, with fourteen zones, I to XIV.

The following table shows the rates charged under the zone tariff:

Zone tariff for local and through passenger traffic on the Royal State railways and on the Kaschau-Oderberg Railway.

No. of zone.	Distance.	Ordinary and mixed trains.			Express or fast trains.		
		First class.	Second class.	Third class.	First class.	Second class.	Third class.
<i>Local lines.</i>							
1	First station	Florins. 0.30	Florins. 0.15	Florins. 0.10	Florins.	Florins.	Florins.
2	Second station .....	.40	23	.15	.....	.....	.....
<i>Main lines.</i>							
1	1 to 25 kilometers (0.62 to 15.53 miles).....	.50	.40	.25	0.60	0.50	0.30
2	26 to 40 kilometers (16.15 to 24.85 miles).....	1.00	.80	.50	1.20	1.00	.60
3	41 to 55 kilometers (25.47 to 34.18 miles).....	1.50	1.20	.75	1.80	1.50	.90
4	56 to 70 kilometers (34.80 to 43.50 miles).....	2.00	1.60	1.00	2.40	2.00	1.20
5	71 to 85 kilometers (44.12 to 52.82 miles).....	2.50	2.00	1.25	3.00	2.50	1.50
6	86 to 100 kilometers (53.44 to 62.14 miles).....	3.00	2.40	1.50	3.60	3.00	1.80
7	101 to 115 kilometers (62.76 to 71.46 miles).....	3.50	2.80	1.75	4.20	3.50	2.10
8	116 to 130 kilometers (72.08 to 80.78 miles).....	4.00	3.20	2.00	4.80	4.00	2.40
9	131 to 145 kilometers (81.40 to 90.11 miles).....	4.50	3.60	2.25	5.40	4.50	2.70
10	146 to 160 kilometers (90.73 to 99.42 miles).....	5.00	4.00	2.50	6.00	5.00	3.00
11	161 to 175 kilometers (100.04 to 108.74 miles).....	5.50	4.40	2.75	6.60	5.50	3.30
12	176 to 200 kilometers (109.37 to 124.28 miles).....	6.00	4.80	3.00	7.20	6.00	3.60
13	201 to 225 kilometers (124.90 to 139.82 miles).....	7.00	5.30	3.50	8.40	6.50	4.20
14	226 and over (140.44 miles).....	8.00	5.80	4.00	9.60	7.00	4.80

NOTE.—Although the silver florin, the former monetary unit of Austria-Hungary, was superseded on October 1, 1892, by the gold crown, the gold standard becoming the law on that date, it would seem that all general values are still estimated in the old money unit. The latest valuation of the florin is given, by our consul at Vienna, at 40.6 cents.

Two ordinary first-class fares are charged on the Orient express train. The passenger fares on the Royal and Incorporated Southern Railway are computed according to the following fundamental taxes per person and kilometer: First class, 4.75; second class, 3.56, and third class, 2.57 krentzers (1.83, 1.44 and 1.94 cents per 0.62137 of a mile), with the additional charge of 20 per cent for express trains.

To further illustrate the zone tariff, let us take the instance cited, of a trip from Bruck to Orsova, via Budapest. The distance between Bruck and Budapest is 228 kilometers (141.68 miles), and belongs, therefore, to the fourteenth zone. The same is the case from Budapest to Orsova, which belongs also to the fourteenth zone, being in excess of 225 kilometers (139.82 miles). According to the principle of the zone tariff, two first-class fourteenth zone fares are charged, namely, 8 gulden (\$3.25) each for the trip from Bruck to Orsova, via Budapest, while a trip between Kaschau and Predial, which does not touch Budapest, and covers a distance of 835 kilometers (518 miles) falls also within the fourteenth zone, and costs only a first-class fare of 8 gulden.

The total number of passenger trains arriving at and departing from Budapest in twenty-four hours amounts to 190, 180 belonging to the Hungarian State railways, and 10 to the Southern.

The tariff for freight rates on all the railway lines in Hungary is fixed according to a system based upon a combination having reference to value and bulk.

For quick transit, there is a tariff for common or ordinary freight at reduced rates, embracing perishable (eatable) goods packed in bulk; the freight tariff, however, contains piece goods, and whole cargoes. The tariff for piece goods is divided into two parts, and two classes.

The piece goods first class contains valuable goods, and piece goods second class less valuable articles—the latter to the amount of 5,000 kilograms. The freight for whole wagon or car loads is divided into six different classes, according to the quantities, which are consigned on one bill of lading and the value of the goods. For instance, all piece goods, except the more valuable, sheepskins, furs, etc., if sent on one bill of lading, containing at least 10,000 kilograms, can be sent in a cheaper freight class, as wagonload, Class A.

In Class B the following articles are enumerated: Potash, asphalt, lead, coal tar, certain cement goods, cocoa fiber, roofing paper, steam boilers, iron and steel, railway utensils, railway carriages, which roll on their own wheels, earthen paints, grease, tannin, panes of glass, glassware of all kinds, portable engines, coke, acids, soda, etc., rosin, etc.

In Class C, cement, cement tiles, chamotte, dolomite, red land (magnesia), limestone, iron and steel, raw material, old and broken iron and steel, earth, flax and hemp, herbs, gas retorts, certain qualities of woods, wood fiber, potatoes, tubes, coal tar, and such less valuable articles. Besides, there are special and exceptional tariffs for different articles, according to their value.

With the exception of Class A, the carload tariff quantity must be at least 10,000 kilograms (22,046 pounds). Certain goods, however, are classified according to the payment of freight and the carrying

capacity of the car placed at its disposal. The existing tariff follows, in kreutzers per 100 kilograms (0.406 cent per 220.46 pounds).

Stations.	Fast freight.		Slow freight.							
	Ordinary.	Reduced.	I.	II.	A.	B.	C.	Specific tariff, I.	Special tariff, 3.	Exceptional tariff, II.
Marchegg to Orsova a.	795	398	427	335	170	113	91	122	72	63
Marchegg to Temesvara	605	298	328	225	140	94	74	103	58	51
Marchegg to Budapest	305	145	150	119	62	47	39	49	32	28
Bruck to Semlin.....	620	309	340	264	144	97	77	106	61	
Budapest to Beekid.....	515	253	281	217	125	85	66	94	52	
Budapest to Fiume.....	521	258	259	173	146	100	80	93	77	
Csacza (frontier) to Kaachau.....	603.9	286.3	177.7	160	96	78.1	59.5	88.3	59.5	
Budapest to Csakortanya.....	308	283	171	129	106	63	50	84	71	

a These rates are applicable also for Vienna and Budapest, on account of steamship competition.

For cereals at stations where there is steamship competition there are specially reduced rates, viz:

To—	Distance.		Rate per 220 pounds.	
	Kilometers.	Miles.	Kreutzers.	Cents.
<i>Competitive rates.</i>				
Baja.....	230	142.92	33	13.4
Ujvedek.....	272	169.02	44	16.2
Vukovar.....	201	125.02	40	16.2
Esseg.....	297	184.55	41	16.6
Semlin.....	343	213.14	46	18.7
Mitrovika.....	347	215.62	49	19.9
<i>Noncompetitive rates.</i>				
Brunvoez.....	230	142.92	63	25.6
Kaachau.....	272	169.02	70	28.4
Perbenyck.....	295	183.27	73	29.6
Devecser.....	298	185.18	73	29.6
Bruck Hunyad.....	349	216.66	81	32.9
Homonna.....	350	217.49	81	32.9

Besides these ordinary rates there are also specially reduced rates given for building material, machinery, etc., for new industries; and also, if required and needed, further rebates are granted.

The other Hungarian railways, with their larger stations, participate in the existing tariff of international transit, having direct tariff in transit with Italy, Switzerland, eastern and northwestern France, Belgium, Holland, Germany, and Russia. The Hungarian State railways are in direct communication with the Levant.

In most of these tariffs there are, according to the importance of the goods exported or imported, specific tariffs, when they go or come to prominent commercial centers.

GRADES, TUNNELS, AND BRIDGES.

The most pronounced grades, tunnels, and bridges on the international lines of railway occur on the following lines: On the line from Marchegg to Orsova, the grade near Pressburg (not very heavy); second grade, more noticeable, at Teregova and Porta Orientalis, where

a long tunnel; then a grade, of from 1 to 5 per thousand, on the line from Brasso (Kronstadt) to Predial, on the Roumanian frontier. There is a very steep grade on the line from Zolyom to Ruttko, with a very sharp curve of from 1 to 14 per thousand. On this line there is also a very extensive embankment (dike) between Kremnitz and Garam Berzovoze. In former times, especially in the spring, when the first thaws began, and in the summer during rainfalls, landslides took place, so that the whole line was liable to be stopped. Since this embankment (Jaline) was reconstructed of good and solid stone materials no interruptions or interruptions have taken place. On this line there are several tunnels, large and small.

On the Fiume (Carlstadt-Fiume) line the great grade begins at Carlstadt and extends to the plateau of Ogulin, and on toward Fiume, where it obtains its greatest height on the Karst Mountains. On the other side from Fiume to the heights of the Karst there are many grades of 1 to 25 per thousand. From Fiume toward Carlstadt there are several tunnels, and near Fiume a large bridge across the valley. The communication on this line was often troublesome and dangerous, as whole trains were frequently blown off the embankment by the bora (strong northwesterly wind); but of late they have secured a safe service by adding to each train some empty railway carriages.

The most prominent bridges are the railway bridge near Budapest and the bridge at Semlin, crossing the border. There are two large bridges on the Theiss, at Szolnok and Szegedin. There are also, on the Fiume line, a railway ferry from Gombos to Bogajero, the Drave bridge, near Zaikany, and the River Save bridge, near Agram. All the other bridges are unworthy of notice.

RIVER TRAFFIC.

Traffic on the Danube plays a very important part in transportation. Budapest lies in the center, whence the business is conducted to the east and to the west. The Danube enters Hungary at Deveny, dividing the same into two parts, from west to Budapest; from Budapest to Semlin, in the east, and from Semlin to Orsova in the south. The Danube traffic is fed through the Theiss River, which is navigable by steamers from Szolnok to Titel, where it flows into the Danube. The Save is navigable to Sissik, and joins the Danube at Semlin. The Drave, which is navigable as far as Barcs, is a large thoroughfare for goods going to Italy, Switzerland, and southern Germany, via Barcs, where the goods are transhipped. The Bega Canal, from Temesvar to Titel, is also a tributary to the River Theiss, and thence to the Danube. Then come the Francis Joseph and Francis canals, as short cuts, making the connection between the Danube and the Theiss rivers.

The principal transport company is the Imperial and Royal Danube Steam Navigation Company, whose fleet consists of about 190 steamers and 782 barges, with a total carrying capacity of 276,809 tons. Most

of the freight barges have a carrying capacity of 350 tons, although some of these carry 820 tons and more, while others have not more than 50 tons capacity, the latter being used mainly for transshipping.

Besides the Imperial Danube Company there are two large companies navigating the river, viz, the Hungarian Steamship Company and the South German Steamship Company, and several private companies. The total fleet of these private companies consist of 112 iron boats of 34,486 tons capacity, and about 1,000 larger wooden freight barges, with a carrying capacity of 200,119 tons. This fleet carries annually about 267,911,802 kilometric tons, or 41.3 per cent of the whole water transport, while the first privileged Danube steam navigation company carries 90 per cent of the passenger traffic and 58.7 per cent of the freight traffic.

The main shipping stations are: On the Danube—Komorn, Gyor (Raab), Vacz (Waitzen), Budapest, Baja, Kalocsa, Mohacs, Vukovar, Ujvidek (Neusatz), Zimony (Semlin), Bazias, Drenkovan. Orsova. On the Theiss—Titel, O-Becse, Szeged (Szegedin), Szentcsongrad, Szolnok. On the Drave—Esseg, Barcs. On the Save—Schababacz, Breka, Brod, Sickovacz, and Sisek.

The chief articles which enter into the international traffic, especially for those stations beyond Budapest, Theiss, Boga, Francis Canal, Save, and Drave, are cereals of all kinds and tobacco, and from the Save station dried prunes in large quantities, an export to the west via Vienna and Regensburg. Milling products, wine, spirits, oak wood, industrial articles of cloth, glassware, iron, iron goods, paper, porcelain, cement, agricultural machinery, mineral water, millstones, steam boilers, carriages and wagons, salt, sugar, and all kinds of merchandise are exported to the East.

Import articles from the east consist of corn, petroleum, hides, tannin, and spirits from Roumania, largely as transit articles to Germany. Imports from the western part of Germany consist of petroleum, grease of all sorts, oils, coffee, rice, jute thread, wood, colors for paints, spices, and products coming by sea.

The tariff is equal to those of the railways, being divided into three classes, besides the quick-freight tariff, which is divided into two ordinary and reduced quick-freight tariffs. Such goods as are not specially enumerated in the classification belong to the first class. The articles which on account of their value do not belong to the reduced Class B belong to Class A, and are charged accordingly for any given quantity, while in Class B are included all freights amounting to at least 1,000 kilograms.

Besides these three classes, there are for certain stations and goods extraordinary tariffs, for Servia, Bulgaria, Roumania, and Russia, for sugar, plows, leather goods, porcelain, beer, wine, glassware, slate, etc.

Freight rates, per 100 kilograms (220.46 pounds), are:

	Class 1.		Class A.		Class B.	
	<i>Kreutzers.</i>		<i>Kreutzers.</i>		<i>Kreutzers.</i>	
From Budapest to—						
Orsova.....	200	\$0. 812	131	\$0. 532	85	\$0. 345
Sulina.....	65	. 264	39	. 158	26	. 105
Szeged (Theiss station).....	140	. 568	84	. 341	56	. 227
Temesvar (Bega).....	160	. 650	98	. 398	72	. 292
Barcs (Drave station).....	135	. 548	81	. 329	57	. 231
	<i>Centimes.</i>		<i>Centimes.</i>		<i>Centimes.</i>	
Odessa.....	700	1. 351	500	. 965	350	. 676
Rustchuk.....	650	1. 158	450	. 872	300	. 579
Sulina.....	685	1. 322	485	. 936	335	. 646
Belgrade.....	300	. 579	180	. 347	124	. 232
From Vienna to—	<i>Kreutzers.</i>		<i>Kreutzers.</i>		<i>Kreutzers.</i>	
Barcs.....	215	. 873	129	. 524	97	. 394
Mohacs.....	170	. 730	102	. 414	76	. 308
Esseg.....	200	. 812	120	. 487	88	. 357
Sissek.....	250	. 102	150	. 609	108	. 428
Szeged.....	224	. 898	132	. 546	96	. 390
	<i>Centimes.</i>		<i>Centimes.</i>		<i>Centimes.</i>	
Belgrade.....	475	. 917	285	. 550	205	. 806
Odessa.....	850	1. 640	600	1. 158	425	. 820
Sulina.....	835	1. 611	585	1. 129	410	. 792

The Danube Steam Navigation Company maintains, in connection with the Austrian Lloyds, a regular service to Galatz, and thence to Batoum, Constantinople, and the south coast of the Black Sea.

The other transport companies have no fixed tariff, but they make tariffs from time to time, which are governed according to supply and demand. At present there is a large transport company to be launched with a capital of 5,000,000 florins (\$2,030,000). The technical and administrative departments are being created, and work will begin in a short time. The company will navigate the whole of the Danube and its tributaries, as well as provide sea transportation.

EDWARD P. T. HAMMOND,

Consul.

BUDAPEST, April 30, 1895.

ITALY.

OCEAN LINES.

Of the ocean lines controlled by corporations, the Navigazione Generale Italiana, the Puglia, and the Siciliana lines receive subsidies from the Government.

Navigazione Generale Italiana.—The wealthiest—paid-up capital of 50,000,000 lire (\$9,650,000)—and most important steamship company is the Navigazione Generale Italiana. In 1892 this company paid a dividend of 4½ per cent on its stock. Its fleet consists of 105 English-built iron steamers, ranging from 522 to 4,580 tons; total tonnage, 106,908 tons; total horsepower, 43,788.

The ocean lines operated by the Navigazione Generale are:

(1) Naples, Genoa, Montevideo, Buenos Ayres (fortnightly); mail service, calling at Barcelona and St. Vincent (Cape Verde Island) or

Las Palmas. Distance from Genoa to Buenos Ayres, 6,231 miles; fare, 750 to 1,000 francs (\$144.75 to \$193); freight, 27.50 francs (\$5.31) per ton. Steamers of about 4,000 tons and 5,000 horsepower. This company sends steamers once a month (commercial service) from Genoa and Naples to New Orleans, to Rio Janeiro and Santos, and to New York.

(2) The Bombay line, from Genoa, Naples, Messina, Venice, Ancona, Bari, and Brindisi; departures every four weeks, calling at Alexandria, Port Said, Suez, and Aden, in connection with Singapore and Hongkong monthly branch.

Mail service.—Passenger fare, first-class, from Genoa to Aden, £24 (\$116.78); to Bombay, £40 (\$194.64). An allowance of 10 per cent is made on the return voyage to passengers reembarking within twelve months, of 20 per cent within six months and of 25 per cent within three months.

Freight rates from Italian ports.—To Aden and Bombay, \$4.866; to Ceylon, \$7.30; to Singapore, \$8.51; to Hongkong, \$12.17. Steamers of about 4,000 tons register and 3,000 horsepower.

The distances between the ports to which the steamships of this company ply are:

From—	To—	Dis- tance.	From—	To—	Dis- tance.
		<i>Miles.</i>			<i>Miles.</i>
Genoa	Naples	335	Suez	Aden	1,307
Naples	Messina	176	Aden	Bombay	1,632
Messina	Alexandria	843	Bombay	Singapore	2,450
Alexandria	Port Said	157	Singapore	Hongkong	1,412
Port Said	Suez	88			

(3) The Mediterranean international and great coastwise lines:

Lines and ports.	Distances.		First-class fare.
	<i>Miles.</i>		<i>Francs.</i>
<i>(a) Genoa Alexandria-Massowah line; monthly.</i>			
Genoa to—			
Leghorn	71		15 = \$2.90
Naples	269		60 = 11.58
Messina	166		120 = 23.16
Alexandria	843		292 = 56.36
Port Said	157		347 = 66.98
Suez	88		393 = 75.85
Massowah	955		
<i>(b) Venice Brindisi-Alexandria; fortnightly.</i>			
Venice to—			
Ancona	123		30 = 5.79
Bari	215		58 = 10.99
Brindisi	62		66 = 12.74
Alexandria	873		251 = 98.25
<i>(c) Genoa Naples-Malta-Tripoli; weekly.</i>			
Genoa to—			
Naples	335		52 = 10.04
Messina	176		110 = 21.23
Reggei	7		100 = 21.23
Catania	47		124 = 23.93
Syracuse	30		135 = 26.06
Malta	83		
Tripoli	198		

(d) *Civita Vecchia Golfo Aranci*.—Island of Sardinia, mail steamers six times a week.

(e) *Naples-Messina*; bi-weekly.—Skirting the coast of Calabria, touching at Diamante, Paola, and Pizzo.

There is a daily line of steamers (Italian and Austrian) between Venice and Triest and between Ancona and Fiume.

The Puglia Steamship Company.—This company has a capital of 1,000,000 francs (\$193,000), owns 11 steamers of 6,584 tons and 1,694 horsepower, and paid 8 per cent dividend in 1892. The steamers of this line are engaged exclusively in the coastwise trade, principally that of the Adriatic.

The Puglia Company operates the following lines: Venice to Brindisi, weekly; Bari to Ancona, Zara, and Fiume, fortnightly; Brindisi to Fiume, weekly; Venice to Taranto fortnightly.

The Siciliana Line.—The small steamers belonging to this line make daily trips from Mellazzo, Sicily, to the Lipari Islands and weekly trips from Messina to the same islands.

The Veloce Steamship Company of Genoa.—This company, with a capital of 13,000,000 francs (\$2,209,000), paid its stockholders a 5 per cent dividend in 1892. It owns 9 steamers of 25,076 tons and 11,468 horsepower (nominal). It engages almost exclusively in the South American and Central American trade. It operates lines as follows:

(1) Steamers of about 4,500 tons register and 6,500 horsepower, three times a month to Buenos Ayres, 6,231 miles, calling at Montevideo. Fare, from 750 to 1,000 francs (\$144.75 to \$193); freight, 25 to 35 francs (\$4.83 to \$6.75) per ton.

(2) Steamers of about 2,000 tons register and 2,500 horsepower, to Colon, 5,850 miles, once a month, calling at Barcelona, La Guayra, Puerto Cabello, Curacao, and Cartagena. Freight, 25 to 35 francs (\$4.83 to \$6.75) per ton.

(3) To Santos, Brazil, 5,337 miles, calling at Pernambuco, Bahia, and Rio Janeiro. Fare, 550 francs (\$106.15); freight, 45 to 55 francs (\$8.49 to \$10.62) per ton.

Foreign lines.—There are a number of foreign steamship companies whose ships touch at Italian ports.

The North German Lloyd Steamship Company runs the following lines out of Genoa:

(1) To Southampton, 2,134 miles; fortnightly. Fare, £8.13s (\$43.08). Steamers 4,500 tons register and 3,500 horsepower.

(2) To New York, 4,100 miles, touching at Gibraltar, trimonthly. Fare, 650 francs (\$125.45); freight, 15 to 25 shillings (\$3.65 to \$6.08) per ton. Steamers of about 5,000 tons register and 6,500 horsepower.

(3) To Sydney, 10,357 miles. Fare, 1,110 marks (\$264.18); freight, 25 to 45 marks (\$6.95 to \$10.71) per ton. One sailing per month. Steamers 3,500 tons register and 2,500 horsepower.

(4) To Shanghai, 8,811 miles. Fare, 1,435 marks (\$341.53); freight, 35 shillings (\$8.52) per ton. One sailing a month. Steamers of about 5,000 tons register and 3,600 horsepower.

The splendid steamers of the Peninsular and Oriental Steamship Navigation Company and of the Orient Line touch at Naples and Brindisi on their way to Egypt and the East.

Coastwise rates.—The passenger and freight rates by the subsidized steamship lines, so far as the coastwise traffic is concerned, are regulated by act of Parliament. The law declares that passenger fare shall be charged in proportion to the distance traveled, and divides the distances into five zones, viz: First zone, 1 to 20 leagues; second zone, 20 to 40 leagues; third zone, 40 to 80 leagues; fourth zone, 80 to 240 leagues; fifth zone, upward of 240 leagues.

The following are the ruling rates of travel by sea per league:

Zone.	First class.	Second class.	Third class.
	<i>Centesimo.</i>	<i>Centesimo.</i>	<i>Centesimo.</i>
First.....	0.75	0.50	0.25
Second.....	.60	.40	.20
Third.....	.45	.30	.15
Fourth.....	.30	.20	.10
Fifth.....	.15	.10	.05

NOTE.—Centesimo equals 0.01 lira, or 0.193 cent United States currency.

Merchandise is divided into four classes. Freight is charged by weight. The law prescribes that the rate shall be in proportion to the distance, viz:

Distance.	First class.	Second class.	Third class.	Fourth class.
	<i>Lira.</i>	<i>Lira.</i>	<i>Lira.</i>	<i>Lira.</i>
For 20 leagues and less.....	2.55	1.91	1.48	1.25
From 20 to 100 leagues, additional for each 10 leagues.....	.124	.1	.074	.05
From 100 to 200 leagues.....	.062	.05	.037	.025
For 200 leagues and upward.....	.031	.025	.018	.014

NOTE.—Lira equals 19.3 cents United States currency.

LAKE SERVICE.

This service is done by companies styling themselves "navigation companies." The steamboats vary in size from 10 to 200 tons. They carry the mails, passengers, and freight. The passenger fare, first class, and the freight rates on the different lakes are practically the same. The passenger fare, first class, is regulated on the basis of 7½ centesimi (1½ cents) per kilometer (0.62137 mile). The freight rate is from 5 to 12 cents per metrical quintal (220.46 pounds) according to distance, calculated by zones of 25 kilometers (15.53 miles).

A steamboat touches, in summer, at every landing, both ways, at least twice a day.

Lake Garda.—The navigation company of Lake Garda owns 8 steamboats, of 1,501 tons and 460 horsepower.

Lake Como.—The Lariana Steamboat Navigation Company owns 16 steamboats, of 877 horsepower.

Lake Lugano.—The fleet of the Lake Lugano Navigation Company consists of 6 steamboats, of 130 tons and 745 horsepower; also 3 flat-bottomed freight barges, of 110 tons. This company owns and operates the railroads connecting Lake Lugano with Lake Como, and the line from Portesse to Menaggio that connects Lake Lugano with Lake Maggiore, and the line from Ponte Tresa to Luino.

Lake Maggiore.—The Lake Maggiore Navigation Company owns 12 steamboats, of 1,443 tons and 2,790 horsepower.

RIVERS AND CANALS.

The only navigable river in Italy is the Tiber, between Rome and Fiumicino, a small port at the mouth of the river, a distance of 20 miles. The railroad that follows the Tiber from Rome to Fiumicino handles most of the freight.

Steamers of 200 tons occasionally ascend the Tiber, laden with wine from Sicily. Barges, loaded with firewood, are floated down the river to Rome.

The business by way of the canal from Pisa to Leghorn is insignificant.

RAILWAYS.

The first railway in Italy, from Naples to Castellamare, was opened to the public on October 4, 1839. At the end of 1871 the railway mileage was 8,154, and at the end of 1892 it was 8,742 miles, without counting the steam trams (narrow-gauge roads), the mileage of which, on January 31, 1891, was 1,587.

The law of April 27, 1885, changed the system of management of Italian railroads. Up to that date there had been four great lines: (1) The Upper Italy Railroad; (2) the Roman Railroad; (3) the Italian Southern Railroad; (4) the Calabro-Sicilian Railroad. Prior to July 1, 1885, the first two lines belonged to and were managed directly by the State; the third, belonging to the State, was run at the expense and for account of the State by the Italian Southern Railroad Company, which operated for its own account the fourth line (also the property of the State), of which it was the lessee.

By the law of 1855, the Sicilian railroads were made a separate and distinct system, and the Continental railroads were divided into two longitudinal lines, called the Mediterranean line and the Adriatic line, from their respective proximity to the two seas that wash the shores of Italy.

Of the 5,563 miles of railway in operation prior to the 1885, 4,470 were operated by the State, and 1,093 miles by private parties. For this partly governmental and partly private system of management, the contracts approved by the law of April 27, 1885, substituted, so far as the four roads mentioned are concerned, a new and uniform system. The roads are now operated by companies, under the supervision of the State, which shares in the profits to a certain extent and in certain proportions, according to the gross earnings and eventually

according to the net earnings, assigning a portion of the profits to the keeping up of the roads, to the extension of the same, and to the care of the property.

The contracts approved by the law of 1885 will run for sixty years, divided into three periods of twenty years each, with the privilege to all parties concerned to withdraw from the contract by giving two years' notice.

The Mediterranean System.—This line, carrying passengers, through mails, and freight, is the property of the State, but it is operated, as stated, by the Mediterranean Company. This road may be said to have three northern termini, viz:

(1) Modane is the first station west of the great tunnel of the Mont Cenis. Modane is the frontier town between France and Italy, and a French as well as an Italian custom-house is established there. The great trunk line from Modane to Reggio di Calabria, the southern terminus, is 1,075 miles long, and passes through Turin, Genoa, Spezia, Pisa, Rome, Naples, and Metaponto. The Modane-Reggio line has a double track from Modane to Turin and from Turin to Genoa; a single track from Genoa to Spezia. Between these two points there are ninety-three tunnels. The road follows the seashore closely, and the hills in many places come abruptly down to the water. The double track has not been completed yet between Spezia and Rome and Rome and Naples. There is but one track from Naples to Reggio. The distances are as follows:

From—	To—	Miles.	From—	To—	Miles.
Modane	Turin	57	Naples	Metaponto.....	170
Turin	Genoa	103	Metaponto	Reggio	270
Genoa	Pisa	103			
Pisa	Rome	208			
Rome	Naples.....	162	Total.....		1,075

At Modane the Mediterranean line connects with the Paris, Lyons and Mediterranean, a French line. The route via Genoa, Turin, Modane, Culoz, Maen, and Dijon is the shortest between Rouse and Paris.

(2) Ventimiglia is the second northern terminus of this line. This is the frontier town, on the Riviera, between France and Italy. Here this line again connects with the Paris, Lyons and Mediterranean Railroad. Distance from Ventimiglia to Genoa, 94 miles (single track). Travelers enter Italy from Nice by this route.

(3) Pino Trouzano, a frontier town between Italy and Switzerland, is the third northern terminus of the Mediterranean system, which connects here with the St. Gothard Railroad, which leads to Lucerne and Central Europe. Distance from Pino Trouzano, via Lerino, Novara, Mortara and Alessandria, to Genoa, 140 miles. Single track from Pino to Alessandria; double track from Alessandria to Genoa.

Milan, the great industrial city of Italy, is connected with Turin (double track) via Novara and Vercelli, distance 93 miles; also with

Turin, via Mortara and Casale (single track), distance 80 miles; and lastly with Turin (double track), via Pavia, Alexandria, and Asti, distance 98 miles.

A new and important line has just been opened from Spezia to Parma, distance 75 miles.

A double-track line runs from Leghorn to Florence, distance 60 miles, via Pisa and Empoli. Distances are as follows:

From—	To—	Miles.
Leghorn.....	Pisa.....	11
Pisa.....	Empoli.....	29
Empoli.....	Florence.....	20
Total.....		60

At Empoli a single-track line runs, via Sienna, to Chiusi, a distance of 95 miles, where connection is made with the line from Rome to Florence, which belongs to the Adriatic system.

From Naples a single-track line runs via Cancello and Avellino to Benevento, 78 miles, and connects at this point with the Adriatic system.

From Metaponto a single-track line runs to Brindisi via Faranto, 70 miles.

The Adriatic system.—The second great trunk line in Italy is known as the Adriatic line, running from Chiasso, the northern terminus, to Gallipoli, the southern terminus, 702 miles, passing through Milan, Piacenza, Parma, Modena, Bologna, Faenza, Ancona, Pescara, Foggia, Bari, and Brindisi. Distances are as follows:

From—	To—	Miles.	From—	To—	Miles.
Chiasso.....	Milan.....	32½	Ancona.....	Pescara.....	92½
Milan.....	Piacenza.....	43	Pescara.....	Foggia.....	119½
Piacenza.....	Parma.....	35½	Foggia.....	Bari.....	77
Parma.....	Modena.....	33	Bari.....	Brindisi.....	70
Modena.....	Bologna.....	23½	Brindisi.....	Gallipoli.....	57½
Bologna.....	Faenza.....	31½	Total.....		702
Faenza.....	Ancona.....	96½			

There is a double track from Chiasso to Bologna, a single track from Bologna to Gallipoli.

An important branch of this road runs from Milan to Venice (double track) passing through Brescia, Verona, Vicenza, and Padua. The distances are as follows:

From—	To—	Miles.
Milan.....	Brescia.....	51½
Brescia.....	Verona.....	42½
Verona.....	Vicenza.....	30
Vicenza.....	Padua.....	18½
Padua.....	Venice.....	23½
Total.....		165½

From Venice to Ponteba, on the Austrian frontier, the road is single track; it passes through Treviso and Udine. The distances are as follows:

From—	To—	Miles.
Venice.....	Treviso.....	18½
Treviso.....	Udine.....	66½
Udine.....	Ponteba.....	43
Total.....		128

Ponteba is on the road from Venice to Vienna. At Udine there is a single-track branch road to Cormons, on the Austrian frontier; distance, 13 miles. This road leads to Triest.

From Brescia there is a single-track road running to Cremona and Piacenza. Distance from Brescia to Cremona, 31½ miles; from Cremona to Piacenza, 18½ miles.

There is a single-track branch road from Verona to Modena, 63½ miles, passing through Mantua. The distance from Verona to Mantua is 25 miles, and from Mantua to Modena 38½ miles.

There is a single-track road from Padua to Bologna, via Rovigo and Ferrara; distance, 77 miles.

Another single-track road runs from Bologna to Leghorn (115 miles), passing through Pistoia (branch road here leads to Florence, 21 miles), Lucca, and Pisa.

The last important line belonging to the "Adriatic system" that we have to mention is the line from Rome via Sulmona to Castellamare Adriatico, 150 miles.

The network of railways in Italy is quite complete. Almost every town is now connected by rail with its neighbors.

Sicilian railways.—When the gap between Patti and Cefalu, on the north coast of Sicily, and the gap between Porto Empedocle and Castelvetro, on the southern coast, shall have been completed, the island of Sicily will be belted. The distances by rail between important points in Sicily are as follows:

From—	To—	Miles.	From—	To—	Miles.
Messina.....	Catania.....	60	Catania.....	Palermo.....	152
Catania.....	Syracuse.....	54	Palermo.....	Trapani.....	122
Syracuse.....	Licata.....	132			

Sardinian Railway.—This road, from Cagliari to Golfo degli Arami, 192 miles, with branches to Iglesias and Sassari, runs almost through the center of the island. Sardinia is undeveloped, and the road is run at a loss to the Government.

PASSAGE AND FREIGHT RATES.

Italy has spent enormous sums—3,840,093,740 francs (\$741,138,092)—in the construction of her railroads, and is at this date paying in interest,

etc., 40,000,000 francs (\$7,720,000) annually for the privilege of railroad communications. The investment, in the end, will no doubt prove profitable. The condition of the roads is good. Streams and rivers are spanned by substantial iron bridges.

The Italian railroads, as has been already said, are operated by companies, under the supervision of the State. Passenger fares and freight rates are fixed by act of Parliament in proportion to the distance traveled; hence, there is no competition, no cutting of rates, possible between the lines, and pooling of freights, terminal charges, and short hauls have no existence in Italy. The passenger rates per kilometer (0.621376 mile) are as follows:

Trains.	First class.	Second class.	Third class.
	<i>Centesimi.</i>	<i>Centesimi.</i>	<i>Centesimi.</i>
Express.....	12.43	8.71	.....
Omnibus.....	11.80	7.91	5.09

NOTE.—100 centesimi equal 19.3 cents.

There is no allowance for baggage, but passengers are permitted to take with them in the coaches bundles weighing not more than 20 kilograms (44.09 pounds) and measuring not more than 0.50 by 0.25 by 0.30 meter (9.8 by 11.9 by 19.8 inches). Baggage pays the same rate as fast freight, namely, 9 cents per ton per kilometer. The rate per car load (8 tons) for fast freight is 0.9040 franc (17.44 cents) per ton per kilometer.

Express trains are expected to make from 34 to 37 miles an hour.

MONT CENIS TUNNEL.

On October 25, 1870, a notable event took place, which, however, passed unnoticed by the greater part of France, owing to the then recent military reverses and to the fact that the invading armies were laying siege to the capital itself.

The event in question was the piercing of Mont Frejus. At 20 minutes past 4 in the afternoon the marvelous machines which had been at work uninterruptedly for more than twelve years in the bowels of the earth, nearly 5,000 feet beneath the most elevated point, penetrated through the interposing wall of rock, and the following day the last barrier separating the two sections of the tunnel was removed by blasting.

There is little need to insist on the immense importance of this work. Its value had been accurately estimated beforehand, and the years which have since elapsed have furnished ample proof of its industrial and practical success.

The Alps had always been a serious obstacle to the commercial relations between France and Italy, even when they no longer formed an impassable barrier. Up to the commencement of this century there

was no carriage road over the mountains, and all merchandise had to be transported by means of mules.

Until the month of June, 1868, all traffic across Mont Cenis was carried on by means of the existing road. But in winter and during rough weather considerable time was occupied in the transit; the road over the pass was frequently blocked by avalanches, and the mountain could then only be crossed in sledges. In spite of the loss of time which necessarily resulted from such a state of things, the carriage road across Mont Cenis greatly facilitated commercial relations between France and Italy. The diligence service was excellently conducted and was as rapid as possible, but the state of the weather could not be entirely disregarded; traffic was therefore restricted within certain limits, and was chiefly confined to the transport of small packages of merchandise, such as were required to be forwarded by express.

The diligence and wagons for the conveyance of goods by road were at length superseded by Fell's railway. Although this constituted a considerable advance in the means of locomotion, it could only be regarded as temporary, and the very light construction of the line rendered it much less useful than it would have been if more powerful locomotives could have been employed on it.

It is easy to understand that the opening of the tunnel, permitting, as it did, of the transportation of unlimited quantities of merchandise in the most rapid manner, was destined to exercise an important influence upon the commerce of the two nations, and that it fully justified the expectations of the authors of the work and the rejoicings which greeted its accomplishment on October 25, 1870.

A few days after the boring was completed a festival was held in celebration of the event. This was but just to the workmen, whose arduous labors had been crowned by so brilliant a success. Sad as the state of France then was, Frenchmen had not lost all interest in this magnificent undertaking, conceived in propitious times, but brought to a successful conclusion in an era of calamity.

The length of the Mont Cenis tunnel in a straight line, as first made, was 13,364 yards, or about $7\frac{1}{2}$ miles. In consequence of the various deviations from the original track, rendered necessary by different causes, the length of tunnel which the trains now traverse is 14,951 yards. Its altitude at the Modane end is 3,862 feet; at the highest point, 4,245 feet, and at the Bardonecchia end, 4,236 feet.

The Mont Cenis tunnel runs from northwest to southeast, from Modane to Bardonecchia. It traverses the following strata of rock: (1) The stratum of granular limestone forming the base of the system and constituting the Italian slope of the mountain through which the tunnel is bored; 10,272 yards. (2) The stratum of massive limestone, in part thrown out of position, near the Col d'Arionda; 386 yards. (3) The stratum of quartz rock above Modane, one of the sections which gave the most trouble, owing to the hardness of the rock; 420 yards. (4) Deposits of anthracite near the Savoy end; 2,270 yards.

The difficulties encountered were greater on the Modane side than on the Bardonecchia side, owing to the occurrence of quartz rocks, sandstone, and pudding stone, while on the Italian side granular limestones, easily pierced, were chiefly met with.

The Modane entrance to the tunnel is 344 feet above the river channel; the Bardonecchia end is on a level with the river on that side. On the north side the gradient is 25 in 1,000, while on the south side it is the minimum necessary to allow water to flow off—0.5 in 1,000. The summit of the mountain is about 5,900 feet above the tunnel.

There is a double line of rails through the tunnel, with a footpath on either side. The interior height of the tunnel is 19.6 feet; its breadth, 26.2 feet at the spring of the arch, and 25.9 feet at the base of the jamb stones. At Modane the arch is semicircular, while at Bardonecchia it is of elliptical form. The stone lining of the tunnel has a thickness of from 1.7 to 3.2 feet, according to the pressure of the earth. The tunnel is illuminated by gas lamps at intervals of about 500 yards, each indicating the distance in kilometers.

After having made the reader acquainted with the principal facts relating to this magnificent work, which has the merit of having been the first of its kind, it remains to say a few words respecting the manner in which the task of excavation was carried out.

The rock was removed by blasting with gunpowder, but the augers which pierced the holes to receive the charges were put in motion by little machines called perforators, which were themselves worked by compressed air furnished by special machines known as compressors, set up at each end of the tunnel and receiving their motive power from a water course. On the Bardonecchia side the torrent of Melezet was made use of, its waters being conveyed a distance of 2 miles through a cleverly arranged system of pipes. At Modane, or rather at Fourneaux, the same service was performed by the Arc, but as the natural fall of the stream was insufficient it was raised by means of four water wheels and pumps to a height of 85 feet. At either end of the tunnel there were ten ram-stroke compressing engines. At Modane there were, besides, two compressing engines with double-acting pistons, worked directly by two water wheels and compressing air continuously.

The compressed air in the reservoirs was conducted as required to the spot where work was going on by a cast-iron pipe 7 inches in diameter. It was then distributed by means of india-rubber pipes to the perforators and to the water cylinders, serving to inject water into the holes for the charges.

Each perforator was composed of two small compressed-air engines, resembling horizontal steam engines, one of which, called the *motrice*, with double action, imparted a slow movement of rotation to the auger, which at the same time caused the hinder engine, called the *percuteur*, to advance. The two machines composing the perforator were

mounted on an iron framework, fixed at any inclination desired, on an iron carriage called an affût, which moved on rails to the front of the opening and carried from five to eight perforators, according to the number of holes to be bored, as well as the water cylinder which poured a continuous jet of water into the holes. Each perforator was arranged to give 200 strokes per minute. The excavation at first followed a small gallery $11\frac{1}{2}$ feet in width and 8 to 10 feet in height, at the bottom of the tunnel.

Relays of workmen following each other at intervals of eight hours worked at the blasting, at the advancement of the rails and the boring engines, at fixing, directing, and removing the apparatus, at charging and exploding the mines, and at removing the débris of the rocks. Thirty-seven workmen were employed simultaneously in this work. The enlargement of the gallery to its full size and the lining of the tunnel were carried on in the ordinary way. The work of boring began at the close of 1855, was completed, as we have seen above, toward the end of 1870, and the tunnel was opened for traffic in September, 1871. The undertaking thus occupied about fifteen years.

During the four years when the ordinary process was employed, the mean annual advance was 197 yards from the Bardonecchia end and 250 yards from the Modane end. Afterwards, when the aid of machinery had been enlisted, the mean annual advance was 688 yards from the Bardonecchia end and 468 yards from the Modane end, where the occurrence of extremely hard quartz rock rendered the work of excavation a very difficult one.

The total cost of this tunnel through the Alps was about \$15,000,000, or over \$1,100 per linear yard.

The number of workmen employed on this gigantic work was, at each end, 1,500 during the winter and 2,000 during the summer. Including the families which many of the workmen brought with them, M. Grattoni estimates that on the average there were not less than 3,000 persons attracted by the works to the vicinity of either end of the tunnel.

The first to conceive the idea of piercing the Alps was a land surveyor of Bardonecchia, Joseph Medail, who, in 1832, began making plans, measuring the distance between that place and Modane, and seeking the spot where the fewest difficulties would present themselves in the construction of a tunnel. At that date his project was regarded as chimerical, but ten years later he laid it once more before the Chamber of Agriculture and Commerce at Chambéry, which, after a favorable report by M. de Mortillet, accorded it its entire approbation.

In 1845, the Piedmontese Government intrusted a Belgian engineer, M. Maus, with the task of making new surveys for the practical realization of the project. M. Maus invented a boring machine which worked admirably, and there was every prospect of the undertaking being successfully carried out, when the war of 1848, ending in the disaster of Novara, compelled the Government to defer the execution of this plan, which had, for the moment, excited universal interest.

In the surveys which were made after peace was concluded, two names are conspicuous, those of Colonel Menabrea and of the civil engineer, Paleocapa, long minister of public works, and an active colleague of Count Cavour, and to them the solution of this question is certainly, in great part, attributable. But however important a part was played by MM. Menabrea and Paleocapa, it was reserved to Cavour, by effecting the financial restoration of his country, to bring the enterprise to a successful termination.

Cavour, by his clever maneuvers and bold devices, brought public opinion to a point at which resistance on the part of the Sardinian Parliament was no longer possible, and his financial combinations were so well devised that the Victor Emmanuel Railway Company agreed to provide no less than 20,000,000 francs of the total amount required.

Science soon placed all its resources at the disposal of Cavour; Maudslow's machine was succeeded by that of M. Colladon, an engineer of Geneva; then, almost at the same time, by the apparatus invented by Mr. Bartlett, and afterwards by the machines furnished by MM. Someiller, Grandis, and Grattoni, which latter were definitely adopted. The project was sanctioned by a decree of April 15, 1857, and on the 30th of the same month the work of excavation was commenced by King Victor Emmanuel, who fired the first charge of powder.

Officially, the works were commenced, but experiments with the object of discovering the best system of boring and also the most suitable apparatus for producing and conducting the motive force, namely, compressed air, were still continued, though the work was proceeding all the time, especially from the Bardonecchia end.

The annexation of Savoy to France in 1860, considered by some persons as likely to cause the suspension of the work on the tunnel, had the contrary effect of facilitating it. The French Government undertook to contribute the sum of 19,000,000 francs, on the condition that the work be completed in twenty-five years. A premium of 500,000 francs was promised for each year gained out of the twenty-five, and the premium was to be increased to 600,000 francs for each year gained in case the work was completed within fifteen years.

By a special contract entered into on October 31, 1867, the engineers Grattoni and Someiller agreed to complete the tunnel before the close of 1871, and this was done. On September 15, 1871, three trains started, one after another, from Turin, conveying to Bardonecchia the Italian guests invited to take part in the opening ceremony, among them numerous senators and deputies, together with several ministers.

HIGHWAYS.

In Italy, the minister of public works sees to the laying out, making, and repairing of the national, provincial, and communal highways. The national roads are those which connect the chief cities of the Kingdom with each other and with the seaports. The provincial roads are

those which connect the capitals of the different provinces, those which connect the capitals of the respective provinces with the seats of the several districts into which the provinces may be divided, and those which connect the capitals of the provinces and the seats of the several districts with the nearest ports. Communal roads are those which connect the county seats with the other towns in their districts. All other public roads are vicinal roads, and are kept up by the communal authorities. All these roads are macadamized and are kept in good order. A bicyclist would find it an easy matter to traverse Italy in every direction.

The national and provincial roads are 26 feet and the communal roads 16 feet in width.

WALLACE S. JONES,
Consul-General.

ROME, August 14, 1894.

GENOA.

Since November, 1891, great changes have taken place in maritime traffic to and from the port of Genoa. At that date the North German Lloyd Steamship Company of Bremen, as an experiment, placed one of its fine steamships on the route between the ports of New York and Genoa. Encouraged by the well-filled staterooms on the steamship *Fulda* and heavy shipments of merchandise to and from both ports, the company placed still another steamer, the *Werra*, on what is now popularly known as the Mediterranean service. Even this addition did not provide for the demands made on the company, so the steamship *Kaiser Wilhelm II* was put on this line, and later, other steamers of the company.

Noticing the success of the North German Lloyd, the Hamburg-American Packet Company, during the winter months of 1892-93 and 1893-94, placed several of its magnificent steamships on the Mediterranean service. This company was well patronized also, for it continued oriental excursions with the New York-Gibraltar-Genoa service. Soon after the arrival of any of these steamships, scores of Americans can be seen examining objects of interest in this old city. The same cause which created a demand for more steamship accommodations from New York to Genoa has brought about an extra demand for railroad transportation from this point to the two Rivas, the Italian lakes, to Nice, Florence, Rome, Milan, Turin, and Switzerland.

The importance of this New York-Gibraltar-Genoa route to American merchants, travelers, and students is so fairly presented in a pamphlet issued by the German companies above named, who "pooled their issues" last January, and now run the Mediterranean service as under one management, that I clip the following extracts therefrom:

The Genoa-New York line offers the best opportunity for returning home to American travelers staying in Italy, the south of France, Switzerland, and on the

Riviera, because Genoa, on account of its geographical situation, as well as in consequence of its excellent communications, can be easily reached from all countries, and because the German companies have placed on this route the largest, safest, and swiftest steamships of the Continent. Pegli, San Remo, Bordighera, Mentone, Monaco, Monte Carlo, Nice, Antibes, Cannes, Bellinzona, Chiasso, Florence, Turin, Venice, and Milan are only about four to six hours distant from Genoa. The following table shows the approximate distances and fares:

From Genoa (or vice versa) by rail to—	Duration of journey.	Fare.		From Genoa (or vice versa) by rail to—	Duration of journey.	Fare.	
		First class.	Second class.			First class.	Second class.
	Hours.	Francs.	Francs.		Hours.	Francs.	Francs.
Alexandria	1½	10. 00	6. 90	Milan	3	20. 00	14. 40
Arona	5	23. 00	16. 25	Monaco	5½	22. 50	16. 25
Bellagio	7	30. 00	20. 65	Monte Carlo	5½	22. 50	15. 60
Bellinzona	7½	35. 00	24. 40	Naples	19	97. 50	68. 75
Bologna	8½	38. 75	27. 50	Nice	7	24. 40	16. 90
Brescia	5½	30. 75	21. 25	Padua	6½	50. 00	35. 00
Cannes	7½	27. 50	19. 40	Pallanza	8½	25. 00	17. 50
Chiasso	4½	26. 90	18. 75	Pisa	4	22. 00	15. 60
Como	4½	26. 25	18. 75	Pavia	2½	15. 65	10. 65
Florence	6	32. 50	23. 00	Rome	12½	65. 00	45. 65
Leghorn	8	24. 40	16. 90	San Remo	4	17. 50	12. 50
Locarno	8	33. 15	23. 75	Trieste	16	82. 00	58. 15
Lucarno	13½	57. 50	40. 65	Turin	4	22. 00	15. 60
Lugano	6½	29. 35	21. 25	Venice	7½	55. 00	38. 75
Luino	6½	28. 15	19. 40	Verona	6	39. 35	28. 15
Marseilles	13½	50. 60	35. 00	Zurich	14½	60. 65	42. 50
Mentone	5½	22. 00	15. 60				

From Genoa and Naples to New York fares vary according to location and size of cabins, a reduction being made when occupied by three adults or more. Berths are to be had as follows:

First saloon, express steamer, 450 gold-francs and upwards, viz, 550, 650, 750, 850, 1,100, and 1,400 gold-francs. Return tickets, 855 gold francs and upwards.

Second saloon, express steamer, 300 and 350 gold-francs. Return tickets, 570 and 665 gold-francs.

Return tickets available for the steamers of both lines from and to New York, Naples, Genoa, Algiers, Gibraltar, Hamburg, Bremen, London, Southampton, Havre, and Paris.

Special round-trip tickets issued for the route Genoa, Gibraltar, Algiers, Naples (Palermo), Genoa, available from any of the ports named.

Direct connection from Genoa and Naples to Egypt and the East by the North German Lloyd's imperial mail steamers.

Special connecting service between Naples and Palermo by companies' own steamers.

Passengers allowed to stop over at all intermediate ports, and to continue voyage by steamers of both lines, without extra charge.

Through tickets to Athens, Constantinople, Smyrna, and all other ports in the Mediterranean touched by the steamers of the Austrian Lloyd.

The companies being under contract with the German and Austrian State railways, issue, in connection with steamship tickets, original railway tickets to all principal railway stations in Germany and Austria, available for one year, at tariff rates.

The railroad fares quoted above are not all accurate, but the differences between the fares quoted and actual rates, where mistakes exist, are merely nominal.

So popular has this route become, that the Cunard Steamship Company proposes to employ its two largest steamers in the Mediterranean service the coming autumn and winter.

THE PORT OF GENOA.

The arrivals and departures of vessels to and from the port of Genoa during the year 1892, according to the latest statistics published, were:

Description.	Arrived.		Departed.	
	Number.	Tonnage.	Number.	Tonnage.
Steamers	2,957	2,987,275	2,951	2,980,738
Sailing vessels.....	2,899	828,715	2,812	326,685

The foregoing vessels represented nearly every nation on earth. England heads the list in numbers, having 863 steamers credited to her in arrivals; Italy is next, then Germany and France in the order named. Many of the English steamers are freighters and come here laden with coal, returning to either Cardiff or Newcastle after discharge of cargo in ballast, where they are again loaded.

OCEAN LINES.

The steamship companies control their own lines. The Italian Government pays them a certain subsidy for carrying the mails to South America and India.

The principal steamship companies operating at this port and coast wise from Genoa are the Navigazione Generale Italiana, with a fleet of 100 steamers; La Veloce (Italian also), whose 11 steamers are actively engaged in the passenger traffic between Genoa and South American ports; North German Lloyd Company, whose steamships, estimated to number 75, run regularly from this port to Naples, Australia, Southampton, and New York.

The Peninsular and Oriental Company has a fleet of 54 steamers, some of which run regularly between Genoa and Alexandria, Egypt.

The Netherlands, Belgium, France, Spain, and Greece take part in the passenger and freight traffic at this port, but not at all in such proportions as the companies above mentioned.

The principal steamship companies whose vessels start from or call at this port, with tonnage and horsepower of steamers, rates of passage and freight, sailings, termini and distances, are as follows:

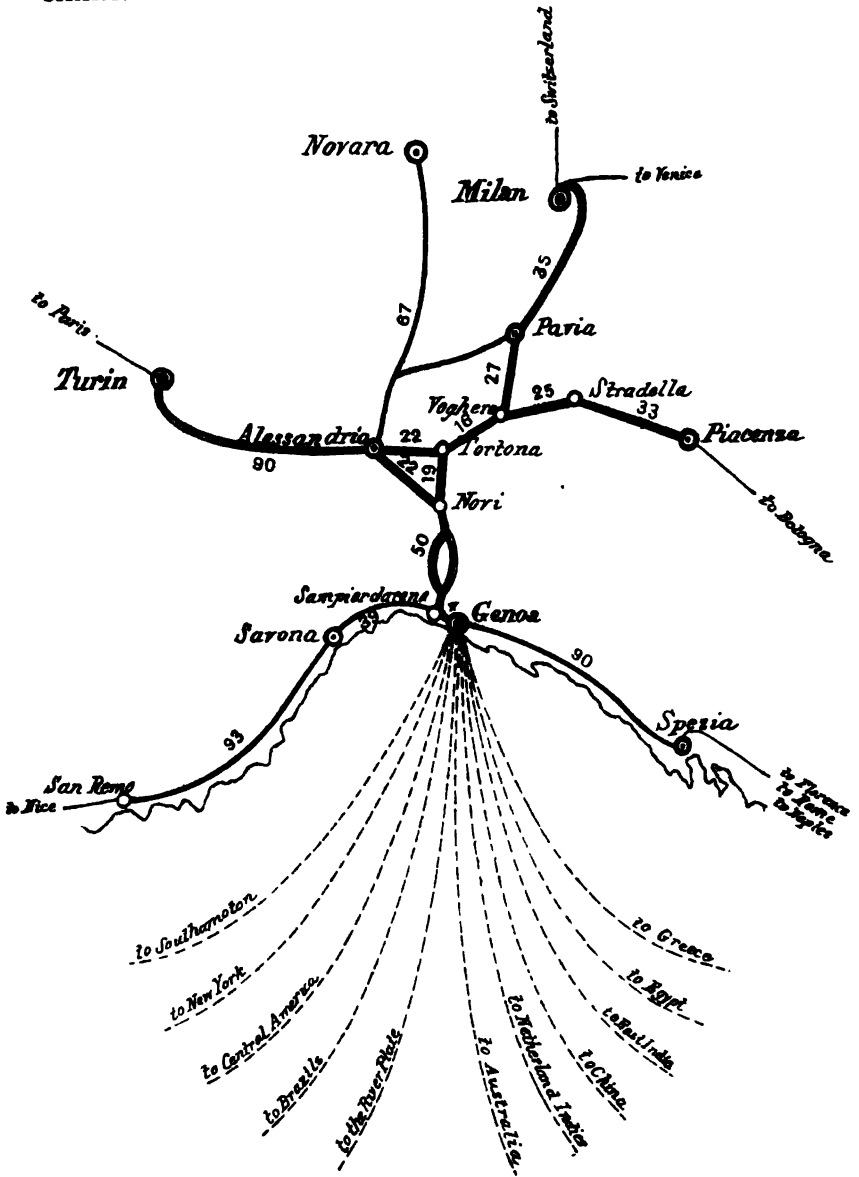
North German Lloyd Steamship Company.—To Southampton (2,134 miles). About two sailings per month. Fare, £8 13s. Steamers of about 4,500 tons register and 3,500 horsepower.

North German Lloyd Steamship Company and Hamburg-American Packet Company.—To New York (4,100 miles). Fare, 650 to 1,400 francs. Freight, 15s. to 25s. 3d. per ton. Calling at Gibraltar (850 miles). Fare, 200 francs. About three sailings per month. Steamers of about 5,000 tons register and 6,500 horsepower.

La Veloce Steamship Company.—To Colon (5,850 miles), calling at Barcelona, La Guayra, Puerto Cabello, Curacao, Sabanilla, and Cartagena. No passengers. Freight, 25 to 35 francs per ton. One sailing per month. Steamers of about 2,000 tons register and 2,500 horsepower.



CHART. RAILROADS IN THE DISTRICT OF GENOA.



════════ Double track
 ════════ Single track
 - - - - - Ocean lines

} Railroad lines

figures indicate the distances in Kilometres from Station to Station.

To Santos (5,337 miles), calling at Pernambuco, Bahia, and Rio Janeiro. Fare, 550 francs. Freight, 45 to 55 francs per ton. One sailing per month. Steamers of about 2,000 tons register and 1,600 horsepower.

To Buenos Ayres (6,231 miles), calling at Montevideo. Fare, 750 to 1,000 francs. Freight, 25 to 35 francs per ton. Three sailings per month. Steamers of about 4,500 tons register and 6,500 horsepower.

Navigazione Generale Italiana.—To Buenos Ayres (6,231 miles), calling at Montevideo. Fare, 750 francs. Freight, 27.50 francs per ton. Two sailings per month. Steamers of about 4,000 tons register and 5,000 horsepower.

North German Lloyd Steamship Company.—To Sydney (10,357 miles), calling at Naples, Port Said, Aden, Colombo, Adelaide, Melbourne. Fare, 1,110 to 1,600 marks. Freight, 25 to 45 marks per ton. One sailing per month. Steamers of about 3,500 tons register and 2,300 horsepower.

Nederland Steamship Company.—To Batavia (7,033 miles), calling at Padang. Fare, 1,470 francs. Freight, 45 to 60 francs per ton. Two sailings per month. Steamers of about 2,000 tons register and 1,400 horsepower.

North German Lloyd Steamship Company.—To Shanghai (8,811 miles), calling at Naples, Port Said, Aden, Colombo, Singapore, and Hongkong. Fares: To Colombo, 1,000 marks; to Singapore, 1,230; Hongkong, 1,330; Shanghai, 1,435. Freight, 25s. to 32s. 6d. per ton. One sailing per month. Steamers of about 3,500 tons register and 3,500 horsepower.

Navigazione Generale Italiana.—To Bombay (4,473 miles), calling at Alexandria and Aden. Fare, £40. Freight, 20s. per ton. One sailing per month. Steamers of about 4,000 tons register and 3,000 horsepower.

Peninsular and Oriental Steam Navigation Company.—To Alexandria (1,329 miles), calling at Naples and Brindisi. Fare, £12. Freight, 10s. to 20s. per ton. About two sailings per month. Steamers of about 3,000 tons register and 2,500 horsepower.

Navigazione Generale Italiana.—To Piræus, calling at Leghorn, Naples, Palermo, Messina, and Catania. Fare, 235 francs. Freight, 15 to 50 francs per ton. One sailing per week. Steamers of about 2,500 tons register and 1,000 horsepower.

RAILROADS.

All the railroads in Italy are owned by the Government, but they were leased a few years ago to corporations for a period of ninety-nine years, subject, however, to certain supervision and taxation.

From Genoa, the main points touched (by rail) in this consular district are Savona and San Remo, en route to Nice, and Chiavari, Sestie, Levante, and Spezia, en route to Pisa, Leghorn, Florence, and Rome. Inland from Genoa the traveler is taken to Novi (in this district) where other roads meet and branch out to Alessandria and Turin in one direction and to Piacenza, Novara, Pavia, and Milan in other directions. For further particulars as to railroads examine accompanying chart. The railroad which extends along the coast from Spezia to San Remo has only one track, but there are side tracks at every station. Inland from Genoa there are double tracks.

In this consular district, fully ninety-nine one-hundredths of the road-bed is on solid rock, and fully one-half the length of the road runs through a portion of the Apennines and Maritime Alps. For instance, from Genoa to Spezia, a distance of about 53 miles, there are eighty-four tunnels, and from Genoa to San Remo, 85 miles, the train is continually

running out of one tunnel to enter another. Also, on leaving Genoa for either Turin or Milan the same monotony exists until the train reaches Novi and Alessandria.

The track is not smooth, owing to its rocky bed. Repairs are slowly made on account of the numerous trains—freight and express—which are moving day and night in different directions to and from Genoa.

To give even an epitome of the history of the building and completion of the railroads in this consular district, would take too much space in this report. It may be stated, however, that it is the boast of the country that Italian workmen and Italian engineers, after battling with natural obstacles for many years, finally forced their way through the hearts of mountains and united rock-bound and sea-bound Genoa by rail with the principal cities of Italy.

The fast trains running daily from Genoa to the several points within this district are: To San Remo, 1; to Turin, 5; to Novara, 4; to Milan, 6; to Piacenza, 2; to Spezia, 4.

First-class railroad fare is 0.1243 lira¹ per kilometer, (0.621376 mile). Freight by fast train, 0.452 lira per ton per kilometer.

There are three printed volumes on the subject of freight charges, from which it will readily be understood how difficult it would be to give further items that would be of interest to the American public.

HIGHWAYS.

There is really but one highway of any importance in this district. This extends along what is known as the East and West Coast. It is known as the old Roman road from Spezia to Genoa, and as the Corniche road from Savona to San Remo and Nice. Its width will hardly average 36 feet, besides sidewalks at certain points. Some portions of the road will not measure more than 12 or 15 feet in width, owing to the lofty and almost perpendicular mountains in such close proximity to the sea. This highway is of but minor importance now except for the delightful excursions which pleasure seekers have thereon, for small steam tugs and lighters and railroad trains deliver, so to speak, merchandise at the very doors of the inhabitants of the province.

There are a few good highways running inland from Genoa about the same width as the Roman-Corniche road, but public traffic on these roads is not of much importance.

JAMES FLETCHER,

Consul.

GENOA, July 21, 1894.

¹Lira=19.3 cents United States currency.

PALERMO.

OCEAN LINES.

Phelps Line.—Controlled by a corporation; headquarters, Liverpool. Route, from New York, New Orleans, or Boston, to Palermo, Messina, Catania, Girgenti, and vice versa. Communication every ten or twelve days.

Condition of line, good. Number of vessels, seven; the smallest having a net tonnage of 1,076; the largest, 1,735; average, 1,383. Vessel having least nominal horsepower has 200; having greatest, 300; an average of 243. This is a freight line only.

Wilson Line.—Controlled by a corporation; headquarters, Hull. Route, from Hull to Palermo, thence to Adriatic ports, and vice versa. Communication, monthly.

Condition of line, good. The number of vessels of this line calling regularly is nine, the smallest having a net tonnage of 550; the largest, 1,914; average, 1,162. Nominal horsepower of the smallest vessel, 98; of the largest, 250; average, 171. This is also a freight line.

Glynn Line.—Controlled by a corporation; headquarters, Liverpool. Route, from Liverpool to Marseilles, Genoa, Naples, Messina, Catania, Palermo, and vice versa. Communication every ten or twelve days.

Condition of line, good. Four vessels of this line ply regularly between Liverpool and Palermo. The smallest vessel registers 666 tons net; the largest, 1,034 tons; average, 870 tons. The nominal horsepower of the smallest vessel is 99; of the largest, 195; average, 147. These vessels carry freight only.

Cunard Line.—Controlled by a corporation; headquarters, Liverpool. Route, from Liverpool to Genoa, Naples, Palermo, Messina, and Adriatic ports. On return from Adriatic ports vessels rarely call at Palermo, except during fruit season, and proceed to Liverpool via some Spanish port. Communication monthly.

Condition of line, good. Eight vessels are engaged in the trade. The smallest vessel registers 1,215 tons net; the largest, 1,533 tons; average, 1,370 tons. The nominal horsepower of the smallest vessel is 212; of the largest, 300; average, 257. These vessels carry freight only.

Sloman Line.—Controlled by a corporation; headquarters, Hamburg. Route, from Hamburg to Mediterranean ports and Palermo; returning via same or other Mediterranean ports. Communication about every ten days.

Condition of line, good. Number of vessels, five. The smallest vessel registers 845 tons net; the largest, 1,009 tons; average, 925 tons. The nominal horsepower of the smallest vessel is 125; of the largest, 150; average, 140. A freight line only.

Cockerill Line.—Controlled by a corporation; headquarters, Antwerp. Route, from Antwerp, via Mediterranean ports, to Palermo; returning via same or other Mediterranean ports. Communication fortnightly.

Condition of line, good. Number of vessels, six. The smallest vessel registers 717 tons net; the largest, 1,352 tons; average, 1,029 tons. The nominal horsepower of the smallest vessel is 90; of the largest, 180; average, 135. These vessels carry freight only.

Leyland Line.—Controlled by a corporation; headquarters, Liverpool. Route, from Liverpool to Palermo, returning via Mediterranean ports for cargo. Communication monthly.

Condition of line, good. Number of vessels, six. The smallest vessel registers 1,131 tons net; the largest, 1,444 tons; average, 1,257 tons. The nominal horsepower of the smallest vessel is 200; of the largest, 250; average, 220. A freight line only.

Anchor Line.—Controlled by a corporation; headquarters, Glasgow. Route, United States ports to Mediterranean ports, and vice versa. Carry freight only.

Condition of line, good. The vessels of the Anchor Line plying between United States ports and Mediterranean ports number fourteen. But few of these called at Palermo within the last year, and those that called were chartered vessels and were run in conjunction with other lines. The smallest vessel registers 1,214 tons net; the largest, 3,275 tons; average, 1,948 tons. The nominal horsepower of the smallest vessel is 182; of the largest, 500; average, 378.

Adria Line.—Controlled by a corporation; headquarters, Trieste. Route from Trieste, via principal Mediterranean ports, to Hull, and vice versa. Communication fortnightly.

Condition of line, good. Number of vessels, thirteen. The smallest vessel registers 707 tons net; the largest, 1,422 tons; average, 994 tons. The nominal horsepower of the smallest vessel is 120; of the largest, 260; average, 180. These vessels carry both freight and passengers.

Koninklyke Nederlandsche Stoomboot Maatschappy.—Controlled by a corporation; headquarters, Rotterdam. Route, Holland ports, via some Mediterranean ports, to Palermo, and vice versa. Communication fortnightly.

Condition of line, good. Number of vessels, five. The smallest vessel registers 596 tons net; the largest, 869 tons; average, 745 tons. The nominal horsepower of the smallest vessel is 110; of the largest, 180; average, 138. These vessels carry freight only.

General Steam Navigation Company.—Controlled by a corporation; headquarters, London. Route, from London to Genoa, Leghorn, Naples, Messina, and Palermo, and vice versa. Communication fortnightly.

Condition of line, good. Number of vessels, eight. The smallest vessel registers 454 tons net; the largest, 803 tons; average, 550 tons. The nominal horsepower of the smallest vessel is 110; of the largest, 150; average, 124. These vessels carry freight only.

Navigazione Generale Italiana.—Controlled in part by Italian Government; headquarters, Rome and Naples.

First route: From Marseilles to Genoa, Leghorn, Naples, Palermo, Messina, Piræus, Salonica, Constantinople, and Odessa, and vice versa. Communication fortnightly. Condition of line, good. Average size of vessels, about 1,600 tons net; average indicated horsepower, about 1,400. These vessels carry freight, mail, and passengers.

Second route: From Marseilles to Genoa, Leghorn, Naples, Palermo, Messina, Piræus, Smyrna, Constantinople, and Odessa, and vice versa. Communication fortnightly. Condition of line, good. Average size of vessels, about 1,600 tons net; average indicated horsepower, about 1,400. These vessels carry freight, mail, and passengers.

Third route: From Marseilles to all large Italian ports, to Trieste, and vice versa. Communication weekly. Condition of line, good. Average size of vessels, about 1,000 tons net; average indicated horsepower, about 1,000. Vessels carry freight, mail, and passengers.

Fourth route: From Palermo to Trapani, Marsala, and Tunis, and vice versa. Condition of line, good. Average size of vessels, about 500 tons net; average indicated horsepower, about 600. Communication weekly. Vessels carry freight, mail, and passengers.

Fifth route: From Palermo to all ports of northern Sicily, Messina, Catania, Syracuse, and Malta, and vice versa. Condition of line, good. Average size of vessels, about 500 tons net; average indicated horsepower, about 600. Communication weekly. Vessels carry freight, mail, and passengers.

Sixth route: From Palermo to all ports of southern Sicily and Syracuse, and vice versa. Condition of line, good. Average size of vessels, about 500 tons net; average indicated horsepower, about 600. Communication weekly. Vessels carry freight, mail, and passengers.

Seventh route: From Palermo to Naples, and vice versa. Condition of line, good. Number of vessels, five. The smallest registers 550 tons net; the largest, 774 tons; average, 650 tons. The indicated horsepower of the smallest vessel is 800; of the largest, 2,600; average, 1,440. Communication daily. Vessels carry freight, mail, and passengers.

Eighth route: Palermo to Naples and New York or New Orleans. Condition of line, good. Vessels average about 1,600 tons net; average indicated horsepower, about 1,500. Communication very irregular. During 1893 eleven vessels cleared from Palermo. Vessels carry passengers and mail only.

Distances, in leagues, between Palermo and the principal cities having communication by water therewith; also first-class passenger rates and the rate per ton for freight occupying about 40 cubic feet of space per ton.

Cities.	Dis- tance.	Passenger rates.	Freight rates.	Cities.	Dis- tance.	Passenger rates.	Freight rates.
Naples	56	\$7. 15	\$2. 80	Taranto	138	\$19. 80	\$2. 50
Leghorn	141	17. 75	2. 50	Brindisi	189	25. 50	2. 50
Genoa	168	19. 90	2. 50	Trieste	319	31. 85	2. 50
Marseille	236	28. 40	3. 25	Venice	343	33. 95	2. 50
Messina	41	6. 00	2. 25	Tunis	71	16. 20	3. 00
Catania	59	12. 40	2. 40	London	761	.....	2. 50
Piræna	224	82. 15	3. 50	Liverpool	766	.....	2. 50
Smyrna	297	29. 45	5. 00	Hull	854	.....	3. 50
Salonica	312	36. 55	5. 00	Rotterdam	828	.....	2. 50
Constantinople	421	44. 90	5. 00	Antwerp	816	.....	2. 50
Odesa	536	65. 30	7. 00	Hamburg	901	.....	5. 00
Syracuse	72	13. 20	2. 50	New York	1, 364	.....	3. 00
Malta	101	18. 25	3. 00	New Orleans	1, 837	.....	4. 50

Number of steamers of different nationalities clearing from Palermo during 1893, also the aggregate tonnage of same.

Nationality.	Number of vessels.	Tons.	Nationality.	Number of vessels.	Tons.
British	281	321, 431	Austrian	40	29, 116
Italian	1, 320	840, 514	Greek	18	16, 524
German	46	50, 113	Other countries	1	428
Dutch	28	22, 078			
Norwegian and Swedish	7	5, 720	Total	1, 772	1, 317, 767
Belgian	31	31, 843			

RAILWAYS.

Palermo to Corleone.—Controlled by a corporation. Length of line, 42 miles. Communication twice daily.

Palermo to Marsala and Trapani.—Controlled by a corporation. Length of line, 121 miles. Palermo to Marsala, 101 miles. Communication twice daily.

Palermo to Roccapalumba and Porto Empedocle.—Controlled by a corporation. Length of line, 90 miles. Palermo to Roccapalumba, 43 miles. Communication twice daily.

Palermo to Termini, Catania, and Messina.—Controlled by a corporation. Length of line, 211 miles. Palermo to Termini, 23 miles; Palermo to Catania, 150 miles. Communication twice daily.

Rate per mile for first-class passengers on all roads, 3.8 cents.

Freight is divided into eight classes. There is a rate for each class. Besides the cost of hauling, a small fee, varying from 40 cents to 20 cents a ton, depending on the class, is charged. The following are the rates for hauling per ton per mile for the eight classes for the first 75 kilometers (46½ miles). After every 75 kilometers a slight reduction is allowed.

Class.	Rate.	Class.	Rate.
	<i>Cents.</i>		<i>Cents.</i>
First.....	5.8	Fifth.....	2.5
Second.....	4.4	Sixth.....	2.2
Third.....	3.8	Seventh.....	1.9
Fourth.....	3.2	Eighth.....	1.6

There are no rivers or canal lines in this district, nor are there any first-class highways.

WILLIAM H. SEYMOUR,
Consul.

PALERMO, November 1, 1894.

MALTA.

OCEAN LINES.

Peninsular and Oriental Line.—This is the principal line of steamships that touch at Malta. It is incorporated by royal charter dated December 31, 1840, and is further empowered by subsequent charters. The authorized capital is \$17,000,000 (paid up, \$11,284,280), and authorized debentures, not issued, \$5,493,200.

Concerning the business and financial condition of the company, the fifty-third annual report of the secretary to the board of directors, December 12, 1893, says:

It has been impossible to refer to the state of the eastern shipping trade during the last two years otherwise than in a tone of discouragement, and up to the moment of writing this report that trade has not experienced any revival. Some benefit has been felt on the China line through an agreement among the principal companies to maintain a common understanding as to rates, and by similar means a very slight advantage has accrued in the outward business to India. On the other hand, the homeward rates, both from Calcutta and Bombay, have been deplorable, and so far as the Australian colonies are concerned, both the outward and homeward rates have been most unsatisfactory, while at the same time the volume of business has been seriously diminished. The further heavy fall in silver has necessarily increased the loss in exchange from which the company has suffered for so many years.

Notwithstanding the "deplorable" and "unsatisfactory" condition of business during the year, dividends equal to 10 per cent were declared on the preferred and deferred stocks.

The termini are London, Sydney, and Yokohama, and the main points touched are Gibraltar, Malta, Marseilles, Genoa, Naples, Brindisi, Alexandria, Port Said, Aden, Bombay, Colombo, Madras, Calcutta, Penang, Singapore, Hongkong, Nagasaki, Hiogo, Albany, Adelaide, and Melbourne.

The fleet is composed of fifty-four vessels, with an aggregate registered tonnage of 234,517, and an effective horsepower of 239,550; speed, 13 to 14 miles per hour.

The vessels are in excellent condition. Every possible protection, and all reasonable comforts and conveniences are supplied. The officers are efficient, courteous, and watchful of the interests of the passengers.

The total distances sailed by this line are: London to Yokohama, 11,956 miles; London to Sydney, 12,500 miles.

American travelers to the Mediterranean and the East will find the most direct route from New York to Gibraltar, Malta, or Naples to be the North German Lloyd Line.

First-class passenger rates and distances between main points.

From London to—	Rate.	Distance.	From London to—	Rate.	Distance.
		<i>Miles.</i>			<i>Miles.</i>
Gibraltar.....	\$48.66	1,290	Aden.....	\$199.79	4,965
Marseilles.....	63.60	1,993	Colombo.....	255.39	7,058
Naples.....	65.46	2,272	Albany.....	292.00	10,448
Malta.....	78.20	2,280	Melbourne.....	292.00	11,940
Brindisi.....	83.00	2,640	Singapore.....	296.85	8,717
Alexandria.....	97.33	3,465	Hongkong.....	361.12	10,154
Port Said.....	107.00	3,570	Shanghai.....	361.12	11,024
Bombay.....	267.66	6,629	Yokohama.....	361.12	11,950
Calcutta.....	267.66	8,488	Sydney.....	340.65	12,500

Rates of freight per ton.

From Malta to—	Rate.	From Malta to—	Rate.
Albany, Adelaide, Melbourne, and Sydney	\$24.33	Aden.....	\$14.60
London.....	8.52	Bombay, Colombo, Calcutta, Penang, Singapore, Hongkong, Shanghai, Hiogo, Nagasaki, and Yokohama.....	19.46
Gibraltar and Brindisi.....	5.07		
Port Said.....	9.73		

The Peninsular and Oriental Company carries the English mails to India, China, and Australia—the India and China mails weekly from Brindisi, to which place they are carried by railroad through France and Italy, the steamers calling at Malta en route to Brindisi every Friday. The mail for Australia leaves London fortnightly, via railroad from Calais to Brindisi, where it is transferred to the Peninsular and Oriental steamers. There is also a fortnightly mail from London to Australia via Naples, thence by steamers.

The contract for carrying the India and China mails is for a period of ten years, from February 1, 1888, to January 31, 1898; the contract for the Australia mail is from February 1, 1888, to January 31, 1895. For these services the company received for the year 1893 (according to the annual report of the secretary to the board of directors), the following amounts:

India and China, net.....	\$1,274,059
Australia, net.....	413,599
Armed cruisers, etc., subvention.....	34,467

Total..... 1,722,125

The Clan Line.—The Clan Line, Limited, and the Clan Line Association are controlled by Cayzer, Irvine & Co., of Glasgow, London, and Liverpool. The termini are London, Calcutta, and Kurrachee. The main points touched are Glasgow, Malta, Port Said, Ismailia, Suez, Aden, Bombay, Calcutta, and Madras. Total distance, London to Calcutta, 7,967 miles.

First-class passenger rates and distances.

From Malta to—	Distance.	Rate.	From Malta to—	Distance.	Rate.
	<i>Miles.</i>			<i>Miles.</i>	
London	2,280	\$48.65	Bombay	3,992	\$172.75
Glasgow	2,608	63.26	Colombo	4,778	172.75
Port Said	935	34.33	Madras	5,388	180.00
Ismailia	979	29.20	Calcutta	6,042	180.00
Suez	1,060	34.06	Kurrachee	3,878	172.75
Aden	2,322	97.33			

The fleet consists of twenty-eight tricomounded Clyde built steamers, and three new vessels in process of construction. The tonnage of the vessels varies from 2,080 to 3,994; they are in good condition and have superior accommodations for first-class passengers.

The service of the Clan Line is divided into three branches:

(1) The Bombay service, performed from Glasgow, via Liverpool, by ten steamers, with an aggregate tonnage of 30,800, calling irregularly at Malta on their outward voyages, but return to London regularly via Malta, making three or four trips per month.

(2) North African service.—The steamers of this service sail from Glasgow, via Liverpool, to Cape Town, Natal Bay, Algoa Bay, East London, and Natal, and occasionally to Delagoa Bay and Mauritius. Eight steamships are employed on this branch (soon to be increased to eleven), with an aggregate tonnage of 24,341 and a carrying capacity of 42,200 tons. They return by the Suez Canal and Malta.

(3) Colombo, Madras, and Calcutta service.—The steamers of this service leave Glasgow and Liverpool punctually every fortnight, via Malta, for Port Said and the Suez Canal. Nine steamers are employed, with an aggregate tonnage of 31,181, and a total carrying capacity of 38,850 tons. They return to London via Malta. The gross tonnage of the fleet is 83,363; it cost upward of \$2,500,000. The line employs about 5,000 persons, including officers; and an idea of the magnitude of its operations in the East may be formed by the amount of tolls paid the Suez Canal, which approximates \$500,000 a year. Freight rates from Malta to London vary from \$4.86 to \$6.80 per ton on general cargo, and from \$7.30 to \$12.50 per ton on costly merchandise. Twenty per cent reduction on return is allowed on first-class passenger rates, available for four to six months. Families of three or more persons, east of Suez Canal, are granted 10 per cent reduction; children over 12 years, full fare; between 3 and 12, half fare; under 3 years, free.

The Deutsche Levant Line.—This line is controlled by a corporation, with headquarters at Hamburg. Termini, Hamburg and Odessa; main points touched, Malta, Piræus, Syra, Alexandria, Smyrna, Salonica, Constantinople, Varna, Galatz, and Braila.

Distance to principal ports and schedule time of voyage.

From Hamburg to—	Time.	From Hamburg to—	Time.	From Hamburg to—	Time.
	<i>Days.</i>		<i>Days.</i>		<i>Days.</i>
Odessa	30	Syra	24	Varna	31
Malta	10	Smyrna	25	Braila	32
Piræus	22	Constantinople	27		
Alexandria	23	Salonica	31		

The fleet is composed of nine steamships, in good condition, which carry from 2,100 to 3,000 tons, departing regularly from Hamburg and Antwerp once a week.

First-class passenger rates from Hamburg.

To—	Rate.	To—	Rate.
Malta	\$71.40	Salonica and Constantinople	\$83.30
Syra and Piræus	77.35	Varna	89.30
Alexandria and Smyrna	80.92	Braila and Odessa	95.20

From Antwerp to the above ports, 25 per cent reduction.

First-class passenger rates from Malta.

To—	Rate.	To—	Rate.
Piræus	\$17.00	Varna	\$38.98
Alexandria and Smyrna	24.33	Galatz, Braila, and Odessa	48.66
Salonica and Constantinople	29.21		

Return rates allow 60 per cent reduction for adults; 25 per cent for children 2 years of age, and 50 per cent for children over 2 and under 12 years.

Rates of freight vary according to the character of the goods, but, approximately, to Levant ports are quoted at \$2.50 to \$5 per ton; from Malta to Hamburg, \$5 per ton, and from Malta to Antwerp, Rotterdam, Amsterdam, Liverpool, London, Hull, and Glasgow, \$6 per ton.

Royal Hungarian Sea Navigation Company (The "Adria").—This line is controlled by a corporation, and operates between Fiume and London, Glasgow, Antwerp, Rouen, Bordeaux, and Malta, monthly and return, with a fleet of twenty-two steamers. Between Malta and Fiume the steamer *Carola* makes fortnightly trips, touching at Syracuse, Catania, Messina, Bari, and Trieste.

Distances from Malta.

To—	Miles.	To—	Miles.	To—	Miles.
Syracuse	85	Messina	155	Trieste	800
Catania	95	Bari	420	Fiume	930

The *Carola* is a new steamer with modern improvements, such as electric light, etc., is in good condition, and has excellent passenger accommodations. Registered tonnage, 889; horsepower, 200; speed, 16 miles per hour.

First-class passenger rates from Malta.

To—	Rate.	To—	Rate.
Syracuse.....	\$4. 40	Bari.....	\$11. 40
Catania.....	4. 40	Trieste and Fiume.....	94. 00
Messina.....	5. 20		

Freight from Malta to Trieste and Fiume, \$3.90 per ton. To intermediate ports, proportionate.

The Transatlantic Line (Compagnie Générale Transatlantique).—This line is incorporated and has ramifications from London and Paris to various parts of the world. Its Mediterranean line employs twenty-four vessels, of a tonnage from 1,208 to 2,656, and a horsepower of 1,100 to 3,800. Weekly trips are made from Marseilles to Tunis, via Malta, and return.

First-class passenger rates.

From—	To—	Rate.	From—	To—	Rate.
Marseilles.....	Tripoli.....	\$42. 80	Malta.....	Tunis.....	\$10. 70
Do.....	Tunis.....	24. 43	Do.....	Tripoli.....	9. 75
Do.....	Malta.....	37. 00			

Distances.

From—	To—	Miles.
Marseilles.....	Tunis.....	1, 384
Do.....	Malta.....	704
Malta.....	Tunis.....	680

Freight rates.

From Malta to—	Rate per ton.
Marseilles.....	\$1. 93 to \$2. 65
Tripoli.....	1. 55 to 2. 65
Tunis.....	1. 55 to 2. 65

Freight rates are governed by the nature, quantity, etc., of the shipments.

The Wilson Line.—The business of this line is controlled by Thomas Wilson, Sons & Co., who operate an extensive system of ocean transportation, devoted mostly to cargo business, from Hull and London to New York and Boston, Hamburg, Bremen, India, and Australia. Its Mediterranean service operates a fleet of twenty-seven steamships (1,113 to 3,212 tons each), all of which are in good condition. They call

at Malta about every twenty-one days. The termini are Hull and London and Alexandria and Odessa. The intermediate ports are Messina, Marseilles, Genoa, Leghorn, Naples, Malta, and Constantinople.

Distances and first-class passenger rates.

From Hull to—	Miles.	Rates.
Odessa	3,600	\$104.86
Messina	2,393	58.46
Palermo	2,364	58.40
Trieste and Venice	3,164	77.85
Marseilles	2,230	68.13
Genoa	2,400	68.13
Leghorn	2,438	68.13
Naples	2,440	58.40
Constantinople	3,284	73.86
Alexandria	3,274	73.00
Malta	2,490	58.40

Freight, general cargo, ranges from \$3.65 to \$7.30 per ton.

The Papayanni Steamship Company.—This steamship line is controlled by a corporation, and operates between Liverpool and Odessa. The vessels touch at Gibraltar, Algiers, Malta, Alexandria, Cairo, Limasol, and Constantinople. Total distance between termini, 3,335 miles.

Distances from Liverpool.

To—	Miles.	To—	Miles.	To—	Miles.
Gibraltar	1,250	Constantinople	3,015	Alexandria	3,027
Malta	2,240	Algiers	1,665	Smyrna	2,870
Syra	2,769				

First-class passenger rates from Malta.

To—	Rate.	To—	Rate.
Liverpool and Odessa	\$48.66	Limasol	\$39.93
Smyrna, Alexandria, and Algiers	24.33	Syra	17.00
Gibraltar and Beyrouth	29.20		

Freight rates to the East are \$3.65 per ton and 5 per cent primage, and to Liverpool \$7.30 per ton.

The Leyland Steamship Line.—This line is controlled by a corporation. The termini are Liverpool and Odessa, a distance of 3,335 miles. The main points touched are Gibraltar, Malta, Alexandria, Syra, Smyrna, and Constantinople.

Distances from Liverpool.

To—	Miles.	To—	Miles.	To—	Miles.
Gibraltar	1,250	Alexandria	3,027	Smyrna	2,870
Malta	2,240	Syra	2,769	Constantinople	3,015

The fleet is composed of thirteen steamships, 301 to 361 feet in length and of 1,010 to 1,453 tons. Carries cargo only. Freight rates to the East are \$3.64 per ton and 5 per cent primage, and to Liverpool \$7.30 per ton.

The Ounard Steamship Line, Levant fleet.—This line is operated and controlled by a corporation, and carries no first-class passengers. The termini are Liverpool and Constantinople, and the main points touched are Gibraltar, Malta, Syra, Smyrna, and sometimes Alexandria.

Distances from Liverpool.

To—	Miles.	To—	Miles.	To—	Miles.
Constantinople.....	3, 015	Smyrna	2, 370	Syra	2, 769
Malta	2, 240	Gibraltar	1, 250	Alexandria	3, 027

The Levant fleet consists of two vessels, one of 1,000 tons and 170 feet in length; the other of 1,400 tons and 300 feet in length. Leave Liverpool every three weeks. Freight rates for Syra, Smyrna, and Constantinople range from \$2.50 to \$3.75 per ton, and to Gibraltar and Liverpool from \$5 to \$7.50 per ton.

The Moss Steamship Company.—This line is controlled by a limited corporation. The termini are Liverpool and Constantinople, and the main points touched are Gibraltar, Algiers, Malta, Alexandria, Syra, and Smyrna.

Distances.

From—	To—	Miles.	From—	To—	Miles.
Liverpool	Malta	2, 240	Liverpool	Gibraltar	1, 278
Gibraltar	Algiers	410	Malta	Alexandria	317
Algiers	Malta	583	Syra	Smyrna	174
Malta	Syra	529	Smyrna	Constantinople ..	296
Liverpool	Constantinople ..	3, 015			

The fleet consists of fourteen vessels of 2,250 to 3,000 tons, in good condition, which make weekly trips.

First-class passenger rates from Malta.

To—	Rate.	To—	Rate.
Liverpool.....	\$48. 65	Syra.....	\$17. 00
Algiers, Smyrna, and Alexandria.....	24. 33	Gibraltar and Constantinople.....	29. 20

Freight from Malta to Liverpool is \$5 per ton.

The City Line.—This line is controlled by a limited corporation. Liverpool and Calcutta are the termini, and Malta, Port Said, Bombay, and Kurrachee the principal intermediate points.

Distances from Liverpool.

To—	Miles.	To—	Miles.	To—	Miles.
Calcutta	7,917	Malta	3,240	Bombay	6,225
Gibraltar	1,250	Port Said	3,290	Kurrachee	6,035

The fleet is composed of seventeen steamships, 361 to 412 feet in length and from 2,102 to 2,933 tons. The vessels are in good condition and make fortnightly trips.

First-class passenger rates from Liverpool.

To—	Rate.	To—	Rate.
Malta	\$48.66	Ismailia	\$73.00
Port Said	68.13	Calcutta, Bombay, and Kurrachee	219.00

Freight from Liverpool to Malta, \$4.86 per ton; return, one-fourth off.

Italian General Navigation and Florio-Rubattino Company.—This line is controlled by a corporation with its principal offices at Rome and Naples. It operates a number of lines in the Mediterranean.

The line between Malta, Naples, and Genoa touches at Syracuse, Catania, Reggio, and Messina. The service is supplied with twelve vessels (900 to 1,500 tons), which make weekly trips. First-class passenger rates from Malta to Genoa, \$30.45, and about the same to other points and returning. Freight rates are as follows: First class, \$10 per ton; second class, \$8; third class, \$6; fourth class, \$3.

The Westcott Line.—This line is controlled by Westcott & Lawrence, London. The service is divided into three branches, viz:

(1) For Alexandria and Batoum; from Antwerp and London, touching at Malta, Smyrna, and Constantinople, taking freight, by transshipment, for Tunis, Tripoli, Larnaca, Limasol (Cyprus), Alexandretta, Mersine, Beyrouth, Gallipoli, Dardanelles, Ismeed, Dede Agatch, Ragos, Kavalla, Mitylene, Scio, Kustendji, and Poti.

Distances in miles.

From—	To—					
	London.	Malta.	Alexandria.	Smyrna.	Constantinople.	Batoum.
Antwerp	250	2,370	3,295	3,215	3,545	4,300
London		2,315	3,240	3,160	3,490	4,245
Malta			925	845	1,175	1,930
Alexandria				625	985	1,740
Smyrna					360	1,115
Constantinople						755

(2) The Danube line, between Antwerp, London, and Ibrail, touching at Malta, Piraeus, Syra, Constantinople, and Galatz, taking goods, by transshipment, for Tunis, Tripoli, Valo, Calamota, Katacolo, Patras, Corfu, Zante, Gallipoli, Dardanelles, Ismeed, Dede Agatch, Lagos,

Kavalla, Mytilene, Scio, Kustendji, Trebizonde, Rodosto, Ineboli, Samsoun, Kerasunde, and Tultcha.

Distances in miles.

From—	To—						
	London.	Malta.	Piræus.	Syra.	Constantinople.	Galatz.	Ibrail.
Antwerp.....	259	2,370	3,020	3,020	3,545	3,990	4,015
London.....		2,315	2,965	2,965	3,490	3,935	3,960
Malta.....			650	650	1,175	1,620	1,645
Piræus.....				60	460	905	930
Syra.....					400	845	870
Constantinople.....						445	470
Galatz.....							25

(3) The Odessa line, from London and Antwerp to Odessa, touching at Malta, Constantinople, Bourgas, and Varna, taking goods by transshipment, for Tunis, Tripoli, Valo, Calamota, Katacolo, Patras, Corfu, Zante, Gallipoli, Dardanelles, Ismeed, Dede Agatch, Kavalla, Mitylene, Scio, Kustendji, Trebizonde, Rodosto, Ineboli, Samsoun, Kerasoon, and Poli.

Distances in miles.

From—	To—					
	London.	Malta.	Constantinople.	Bourgas.	Varna.	Odessa.
Antwerp.....	259	2,370	3,545	3,665	3,795	4,147
London.....		2,315	3,490	3,640	3,740	4,092
Malta.....			1,175	1,325	1,425	1,777
Constantinople.....				150	250	602
Bourgas.....					100	450
Varna.....						352

The services of the respective branches are performed by a fleet of nine steamships, varying in length from 241 to 316 feet, and in registered tonnage from 867 to 1,278. The ships are in good condition; they call at Malta about every ten days.

First-class passenger and freight rates from Malta.

To—	Passenger.	Freight per ton.	To—	Passenger.	Freight per ton.
Piræus and Syra.....	\$14. 60	\$3. 89	Bourgas, Galatz, Ibrail, and Varna.....	\$29. 20	\$6. 07
Alexandria.....	24. 33	3. 89	Batoum and Odessa.....	34. 00	6. 07
Constantinople and Smyrna	24. 33	4. 86			

O. F. Gollcher & Sons' Line is controlled by the proprietors. The fleet consists of two well-conditioned steamships, with registered tonnage of 139 and 539 and length of 140 and 200 feet, respectively. There are no accommodations for first-class passengers. The termini are Malta and Trieste; main points touched, Syracuse, Catania, and Tunis.

Distances in miles.

From—	To—			
	Syracuse.	Catania.	Trieste.	Tunis.
Malta.....	100	145	1,020	310
Syracuse.....		45	925	
Catania.....			880	

Freight rates per ton are as follows: From Malta to Catania and Syracuse, \$1.94; to Tunis and Trieste, \$2.92.

The foregoing includes all regular lines of ocean steamships that "carry passengers, through mails, or freight in very considerable quantities" in this consular district.

RAILROADS AND HIGHWAYS.

There are no railroads in this district, except a local line from Valletta to Civita Vecchia, a distance of 8 miles, operated by the Maltese Government, and serving the purpose of a street railway. Neither are there any navigable rivers or canals or highways, as such, only stradas (roads) leading from Valletta to the different villages on the island.

ACKNOWLEDGMENTS.

In the absence of commercial and navigation statistics at this port, I am under obligation to Hon. F. Vella, collector of the port, and to the agents of the respective ship companies for valued assistance.

D. C. KENNEDY,
Consul.

MALTA, August 1, 1894.

GREECE.

OCEAN LINES.

The Panhellenic Steam Navigation Line.—This is the only great through line owned in this country. It is a private corporation with a capital of 5,000,000 drachmas (\$965,000). The fleet consists of the following vessels: Three steamships of 300 tons each and 2,000 horsepower; three steamships of 1,800 tons each and 1,750 horsepower; and six coasting steamers of about 800 tons each and 400 horsepower.

The three first named keep up fortnightly communications with Piraeus, Marseilles, Chios, Smyrna, Constantinople, Samsoun, Trebizonde, and Novorisisk, carrying mails, passengers, and cargo. No fixed rates for either passengers or cargo can be given, as these vary in accordance with the competition of foreign lines.

The second three steamers of this line run fortnightly to and from Piræus, Smyrna, Chios, Mytelene, Constantinople, Samsoun, and Trebizonde. On returning to Piræus, the steamers make trips to and from Calamata, Patras, Corfu, and Trieste. Rates of passage and freight can not be given for reasons stated above. The competition with this line is very great, owing to the number of foreign ships trading to the same ports. The remaining six vessels of the company do a local coasting trade, and have daily sailings for coast towns and the islands of Greece.

The condition of the first named six steamers of this line is considered fairly good for mixed cargo and passenger vessels, although not comparable with the first-class lines trading to the United States, or to the Messageries Maritimes, the Austrian Lloyds, or the Russian Steam Navigation Company, trading in the Mediterranean and Black seas. The speed of the steamers of the Panhellenic Line is on an average 10 knots per hour.

Foreign lines.—The foreign lines are the Messageries Maritimes (French); the Fraissinet (French); the Austrian Lloyds; the Florio-Rubattino (Italian); the Khedive (Egyptian); and the Russian Steam Navigation Company. All these lines have sailings from Piræus to the ports touched by the Panhellenic steamers.

Coastwise lines.—The New Hellenic Company is a private corporation, with headquarters at Syra. This company has six steamships of 900 tons each and 400 horsepower, and four steamships of 400 tons each and 150 horsepower.

The Goudé Steamship Company is also a private corporation. The company has five steamships of from 190 to 600 tons and 60 to 300 horsepower.

The McDowall & Barbour Hellenic Steamship Company is composed of five steamships of 200 to 800 tons and 100 to 250 horsepower.

Besides the foregoing, there are several small steamers of less than 100 tons and 100 horsepower doing a local trade between several of the islands and ports on the mainland.

RAILWAYS.

The railways in Greece are of local importance only, if we except the line to Patras from Piræus, which has the carrying of the European mails to and from Patras to Athens and Piræus. This line is called the Piræus, Athens and Peloponese Railway, and is a private corporation, with a capital subscribed and paid up of 25,000,000 drachmas (\$4,825,000). It is a single-track road, 1 meter (39.37 inches) gauge, and connects Piræus with Athens, Corinth (crossing the Corinth Canal by high bridges), Kiato, Vostizza, and Patras. Passenger trains run this distance twice daily each way. From Patras the line runs to Pyrgos, Olympia, Catacolo, and Cyllene. Cyllene is famous for its baths, which cure bronchial diseases. The company

has here erected baths and fairly good hotels for the use of patients. Another branch of the line, from Corinth, runs to Argos, Nauplia, and Mycene; from Nauplia to Mylos, and thence to Tripolitza. The Mylos-Tripolitza section was to be continued through the Peloponnesus to Calamata, but the contracting company failed, and the line remains unfinished. A small part on the Calamata side is worked at present as far as the village of Diavolitza.

The following are the distances and fares charged:

From—	To—	Distance.	Fare.
		<i>Miles.</i>	
Piræus	Corinth	62.14	\$1.78
Corinth	Patras	80.78	3.18
Do	Nauplia	40.02	1.56
Nauplia	Tripolitza	49.96	1.95

The total length of the Piræus, Athens and Peloponese Railway is 353 miles.

The Athens and Piræus Railway is the oldest, shortest, and busiest in the Kingdom. It is double track, broad gauge (4.91 feet), extending from Athens, via Phalerum, to Piræus, 6.2 miles. The fare from Piræus to Athens is 19.3 cents, and from Athens to Phalerum, 11½ cents. It is a private corporation, and carries no freight.

The Railway of Attica, built and operated by the Laurium Mining Company, is a single-track, narrow-gauge road, connecting Athens with Laurium, and by a branch line with Kephissia. The company was formed in 1882, and the road was completed in 1885. Its capital is \$1,042,200, in 27,000 shares. It has 76 kilometers (47.22 miles) of track, which cost \$965,000 to construct. It has 19 stations, 196 bridges, 131 curves, 42 passenger carriages, 46 freight cars, 8 engines, and employs 115 men. It runs 6,462 regular and 328 special trains per year. In six years its passenger traffic has nearly doubled. It now carries 351,567 persons in a year, and its freight tonnage has increased nearly sixfold, from 3,000 to 17,128 tons. It is the carrier of the entire traffic of the most important mining district in Greece, as well as the richest plains of Attica. From the mines of Daskalio it carries to Laurium 115,000 tons of iron ore, and from the two villages of Markopoulo and Koropi to Athens 1,200 barrels of must, annually. The company has contracted for another branch to connect Athens with the marble quarries of Pentelicus. The fare from Athens to Laurium is \$1.42.

Thessalian railways.—The line from Volo to Larissa, Karditsa, and Kalambaca is owned by a private corporation, and is single track, 1 meter (39.37 inches) gauge, and 127 miles in length. Fare from Volo to Larissa, \$2.39.

A single-track line also connects Missolonghi with Agrinion. At present this is only of local importance. Length, 27.38 miles.

Piræus and Larissa Railway.—About three years ago, a contract was made between the Greek Government and a British company to

construct a line, single track, for the State, between Piræus and Larissa, with a branch from Lamia to Styliða and Chalcis. The work of construction proceeded fairly for about a year or eighteen months, when financial trouble overtook the State, and the contractors abandoned the work. The line remains in a half-finished condition, no part of it having been yet opened to traffic, although about \$3,860,000 has been expended on it.

HIGHWAYS.

Fairly good macadamized roads exist throughout Greece, connecting the principal towns and villages. The width of these roads varies from 30 feet, near Athens and Piræus, to 20 feet, and 12 feet in the provinces, according to the density of traffic over them.

CANALS.

The only canal in Greece is that through the Isthmus of Corinth, which was lately opened for traffic,¹ but up to this time it has only been used to a small extent by local coasting steamers of small tonnage.

GEORGE HORTON,
Consul.

ATHENS, *January 1, 1895.*

TURKEY.

Constantinople, the capital and commercial center of the Ottoman Empire, is connected by rail with western Europe and Asia Minor, and by steamer with Liverpool, London, Antwerp, Hamburg, and with all the principal ports of both the Black and Mediterranean seas.

By reason of new railroads and increased steamer service, Turkey is much more accessible than in former years, and the modes of travel are quite safe and convenient. The railway time tables change so often, and the steamers are so numerous and changeable, both as to time, departure of and prices, that it is impossible to give more than general information without extending this report beyond proper limits.

RAILWAYS.

The railways in European Turkey are operated by the Oriental Railway Company which is controlled by Austrian capital. That part of the main line in Turkey extends from Constantinople to Mustapha Pasha, on the Bulgarian frontier, 220 miles, and connects the capital with western Europe, via Vienna. At Adrianople, a branch line leads to Dede Agatch, on the Ægean Sea, and is now being continued along

¹ See Consular Reports for November, 1893, No. 158, p. 308.

the coast to Salonica. There is another line from Salonica to Varanya, in Servia (280 miles), where it connects with the main line for Vienna. In Asia Minor, the Anatolian Railway, constructed by a German company, extends from Haidas Pasha (a suburb of Constantinople), on the Asiatic shore of the Bosphorus, to Angora, a distance of 370 miles, with a branch line from Eski Shehr to Kutaieh. All these roads are single track, but reasonably well built and kept in fair condition.

A daily express train leaves Constantinople for Vienna, where close connection is made with trains for the principal cities of Europe. In addition to this, the Orient Express, composed of sleeping and dining cars only, runs, biweekly, each way, without change, between Paris and Constantinople, via Vienna. The fare on this train, including a sleeping berth, is about one-fourth higher than the regular first-class rate.

The following table gives the first-class rate for passengers and freight per ton from Constantinople to the cities named:

Constantinople to—	Passengers.	Freight.	Constantinople to—	Passengers.	Freight.
Adrianople.....	\$9. 48	\$3. 91	London	\$63. 00	\$104. 22
Angora	16. 15	12. 42	Munich	48. 17	45. 81
Belgrade	29. 88	29. 43	Paris	68. 52	78. 12
Budapest	33. 91	35. 01	Philippopolis.....	14. 83	14. 67
Berlin	52. 86	49. 41	Sofia	18. 78	18. 36
Eski Shehr.....	8. 37	12. 34	Vienna.....	38. 28	39. 06
Lameed.....	1. 68	3. 60			

OCEAN LINES.

The Khedive Mail.—This line of fast steamers is owned by an Egyptian company. A vessel leaves Constantinople every Wednesday afternoon for Alexandria. These vessels are first-class, and run, in connection with the Orient Express carrying the European mails for Egypt and India, from Constantinople to Alexandria in fifty-one hours.

Austrian Lloyds.—This line, controlled by an Austrian company, has seventy-two steamers, one-third of which are modern, and furnish very good accommodation for travelers. The company has lines as follows, leaving Constantinople weekly: (1) To Trieste, via Piraeus, Corfu, and Brindisi; (2) to Alexandria, via Smyrna, Beirut, and Jaffa; (3) to Varna, on the Black Sea; (4) to Batoum, via Samsoun and Trebizonde; (5) to Galatz, via Bourgas; (6) a line fortnightly to Trieste, via Salonica.

Russian Company of Navigation and Commerce.—This line is owned by a Russian company and runs (1) to Alexandria direct; (2) to Alexandria, touching along the Syrian coast one week and Athens the next; leaves once a week; (3) to Odessa, on the Black Sea, twice a week. This company has a large and well-fitted fleet. Some of the vessels belonging to the volunteer reserve fleet are over 8,000 tons.

Messageries Maritimes.—A French company with a very large fleet, built, most of them, with the latest improvements; running from Constantinople (1) to Marseilles, via Dardanelles, Syra, and Calamata; (2)

to Marseilles, via Dardanelles, Smyrna, and Piræus; (3) to Batoum, via Samsoun, Kerasoon, and Trebizonde; (4) to Odessa. Departure once a week; date varies. Freight varies between \$3 and \$3.40 to Marseilles per ton.

Fraissinet & Co.—This French line has a large fleet, the gross tonnage of which is between 1,500 and 3,000. Runs from Constantinople (1) to Marseilles, via Smyrna, fortnightly; (2) to Marseilles, via Dede Agatch, Salonica, Piræus, fortnightly; alternate weeks.

Paquet & Co.—A French line running once a week to Marseilles direct; very small vessels, and principally used for carrying freight.

Navigazione Generale Italiana.—An Italian line of mail steamers, with a fleet of 105 vessels; gross tonnage from 500 to 4,500; running from Constantinople (1) to Naples, via Piræus; (2) to Brindisi, via Piræus, Patras, and Corfu; (3) to Odessa.

Pan'hellenic Company.—A Greek line carrying mail and having a fleet of nine vessels. Gross tonnage, 500 to 3,000. Runs weekly from Constantinople (1) to Athens, Itrusto, and Marseilles; (2) to Batoum, via Samsoun; (3) to Smyrna and Athens.

Turkish lines.—A Turkish company having a small fleet of steamers, gross tonnage from 500 to 3,000, does the coasting trade between Constantinople, the Black Sea, Sea of Marmora, and the Syrian coast; also the Barbary coast service. Departures, once or twice a week for distant ports; daily for the Sea of Marmora.

Another Turkish line connects Constantinople with the Syrian coast, the Grecian islands, and the Turkish islands of the Grecian archipelago. The fleet is small, and few of the steamers have accommodations for travelers.

English lines.—All the English lines leave Constantinople for Liverpool or London, touching at Smyrna, Malta, or Gibraltar. They have a tonnage of from 3,000 to 7,000 tons. The following are some of the most important:

Regular lines of British steamers between Constantinople and other ports.

Lines.	Number of vessels.	Average horse-power.	Average net tonnage.	Sailings.	From—
Papayanni	6	300	1,500	Fortnightly	Liverpool
Cunard.....	6	280	1,400	.....do	Do.
Moss.....	6	250	1,200	.....do	Do.
Leyland.....	6	260	1,200	.....do	Do.
Wilson.....	10	300	1,600	.....do	Hull.
Johnston's.....	7	220	1,200	Weekly.....	Constantinople, Odessa, and Marseilles.
Westcott & Lawrence...	8	200	1,000	Fortnightly	London.
John P. Best & Co.....	7	200	1,100	.....do	Antwerp.

Passenger and freight rates.

Constantinople to—	First-class passenger rates.	Freight per ton.	Constantinople to—	First-class passenger rates.	Freight per ton.
Alexandria.....	\$38. 60	\$6. 93	Liverpool.....	\$70. 00	\$11. 00
Athens.....	15. 44	3. 42	London.....	57. 90	7. 50
Antwerp.....	77. 20	26. 01	Marseilles:		
Batoum:			French.....	43. 42	} 6. 93
Austrian.....	37. 02	} 3. 42	Italian.....	38. 60	
French.....	23. 16		Naples.....	51. 72	17. 37
Russian.....	28. 56		Odesa.....	15. 44	2. 61
Beirut.....	63. 07	5. 13	Smyrna.....	11. 56	3. 42
Brindisi:			Salonica:		
Austrian.....	47. 76	} 17. 37	Italian.....	17. 94	} 1. 71
Italian.....	42. 26		Austrian.....	20. 74	
Dardanelles.....	6. 75	1. 26	Sebastopol.....	15. 44	6. 93
Genoa.....	64. 92	17. 37	Trieste.....	71. 10	6. 93
Hamburg.....	77. 20	26. 01	Trebizonde.....	26. 53	3. 42
Jaffa.....	60. 60	5. 13	Varna.....	8. 62	1. 71

LUTHER SHORT,
Consul-General

CONSTANTINOPLE, April 3, 1895.

BULGARIA.¹

RAILWAY DEVELOPMENT.

In 1892, the Bulgarian Government contracted with the Austrian Land Bank for a loan of 125,000,000 francs (\$24,125,000) for the completion of the railway system in the principality and the construction of new harbors at Varno and Burgas.

It has now been decided by the council of ministers to begin the construction of the following lines:

(1) Sofia-Roman, a distance of 109 kilometers (67.73 miles), at a cost of 22,000,000 francs (\$4,246,000).

(2) Roman-Plevna-Polikranishte-Shumla, 333 kilometers (207 miles), at a cost of 25,000,000 francs (\$4,825,000).

(3) Polikranishte-Tirnov-Nova-Zagora, 110 kilometers (68.3 miles), at a cost of 16,500,000 francs (\$3,184,500).

(4) Polikranishte-Roustchouk, 105 kilometers (65 miles), at a cost of 9,500,000 francs (\$1,833,500).

(5) Gabrovo-Selvi, to a point on the central line, 70 kilometers (43½ miles), at a cost of 6,000,000 francs (\$1,158,000).

In addition to these, the following lines have been proposed, and will be built soon after the completion of the above-named lines:

(1) Pernik, south of the Turkish frontier, 80 kilometers (49.7 miles), at a cost of 9,000,000 francs (\$1,737,000).

¹Extract from a report by Consul Stephan, of Annaberg, dated April 13, 1895, printed in Consular Reports for August, 1895.

(2) Mesdra-Wratza-Widdin, 130 kilometers (80.8 miles), at a cost of 8,450,000 francs (\$1,630,850).

(3) Philippopolis Karlofer-Kasanlyk-Nicolaevo, 139 kilometers (86.4 miles), at a cost of 7,645,000 francs (\$1,475,485).

RUSSIA.

ST. PETERSBURG.

The following report is confined to those highways of traffic in European Russia of which St. Petersburg is actually the starting point, and which serve to give that city direct communication with different parts of the Empire.

OCEAN LINES.

St. Petersburg has no great through lines of ocean traffic, but coast-wise steamship lines connect the capital with the other important ports on the Russian coast of the Baltic Sea, and with Stockholm. Steamship communication with English ports, principally with Hull and London, is irregular, there being no direct line of steamers between St. Petersburg and any port of western Europe.

(1) Steamers run from St. Petersburg to Helsingfors, Abo, and Torneo three times a week. The passenger fare, first class, to Helsingfors, is 8 rubles; to Abo, 11 rubles; and to Torneo, 16.30 rubles, with 100 pounds of passenger baggage free.

(2) Steamers run from St. Petersburg to Reval and Riga twice a week, the first-class fare to Reval being 6 rubles, and to Riga 12 rubles, with 100 pounds of passenger baggage free.

FREIGHT RATES.

Freight rates are strictly classified, and there is a great difference between the several classes of freight, as will be seen by the following table of through rates between St. Petersburg and Riga:

Articles.	Per pood. <i>a</i>	Per ton.
	<i>Kopecks. b</i>	
Pig iron, nails, flour, pease, soap, and tallow candles.....	3	\$2.55
Potaah, stearine candles, carboard, tin plate, potatoes.....	10	3.19
Writing paper, peeled barley, groats, rice, starch, tallow, oil, sirup, oleine, white lead, falence.....	12	3.82
Books, wall paper, window glass, sail cloth, scythes, dyewoods, and dye materials, seed, wine, whiaky, leaf tobacco, and sugar.....	15	4.78
Wool, leather, smoking tobacco, cigars, manufactures, leather goods, rubber goods, fruits, and corke.....	25	7.97
Colonial goods, ironware, and raw hides.....	20	6.38
Papyrus, glassware, and arms.....	30	9.57
Drugs, plants, and smokers' articles.....	40	12.96

a 1 pood = 36.112 pounds.

b 1 kopeck = $\frac{1}{100}$ of a ruble. The consul-general, in his reductions throughout his report, estimates the paper ruble at 50 cents.

RIVER AND CANAL LINES.

There is no passenger steamboat line from St. Petersburg to the interior of Russia. Freight is carried by river and canal craft as far as Tver or Rybinsk, on the Volga River. Tver is the head of steamship navigation on the Volga. Passengers from St. Petersburg desiring to use the Volga steamboats usually go by rail to Rybinsk. From Tver to Astrakhan, at the mouth of the Volga, the distance is nearly 2,000 miles.

(1) From Tver to Rybinsk, a distance of 245 miles, steamboats run daily, the passenger fare, first class, being 7.50 rubles, or about \$3.75. On this line there is one passenger steamer of 42 horsepower, 140 feet in length and 21 feet in width. Besides this steamer, there are three passenger and freight steamers of 165 horsepower, the largest being 187 feet in length and 24 feet in width.

(2) From Rybinsk to Nizhni-Novgorod, a distance of 307 miles, steamboats run twice a day, first-class fare being 6 rubles, or about \$3. The time occupied in the passage downstream is twenty-nine hours, and upstream forty-four hours. The number of passenger steamers on this line is 17, with a total horsepower of 828, the largest having 80 horsepower, with a length of 217 feet and a width of 31 feet. The number of freight and passenger steamers is 18, with a total horsepower of 1,322, the largest having 120 horsepower, with a length of 224 feet and a width of 37 feet. There are also 4 passenger steam tugs, with a total horsepower of 215, the largest having 120 horsepower, and 124 freight steam tugs, with a total horsepower of 12,258, the largest having 460 horsepower.

(3) From Nizhni-Novgorod to Astrakhan, a distance of 1,443 miles, steamboats run daily, the time occupied in the trip downstream being about 150 hours, and upstream 230 hours. The through fare, first class, is 23.50 rubles, or about \$12.

The last official publication (1893) relating to the traffic between Nizhni-Novgorod and the mouth of the Kama River and between the mouth of the Kama and Astrakhan gives the following statistics:

Nizhni-Novgorod to mouth of the Kama.

Vessels.	Number.	Horse-power.
Passenger steamers.....	5	77
Passenger and freight steamers.....	4	158
Passenger steam tugs.....	7	227
Freight tugs.....	58	1,928

The largest passenger steamers have 500 horsepower each, being 287 feet in length and 35 feet in width. The largest freight steamers have 400 horsepower, with a length of 285 feet and a width of 40 feet.

Mouth of the Kama to Astrakhan.

Vessels.	Number.	Horse-power.
Passenger steamers.....	20	2,537
Freight and passenger steamers.....	34	6,045
Passenger steam tugs.....	6	296
Freight tugs.....	71	4,774

The largest freight steamers have only 120 horsepower, their length being 200 feet and their width 19 feet. The largest passenger steamers have only 40 horsepower, with a length of 110 feet and a width of 15 feet.

Although these figures were published in 1893 they represent the state of things as it existed in 1891, since which time there has been considerable increase in the number of steam craft on the Volga, an increase probably amounting to one-fourth of the figures given.

From Nizhni-Novgorod there is also a regular steamboat line for passengers and freight to Perm, on the Kama River, a distance of 1,488 versts.¹ The first-class fare is 13 rubles, and the time occupied in the trip to Perm, three and a half days, and from Perm to Nizhni-Novgorod, three days.

The freight rates on the Volga fluctuate according to the amount of business and the state of the water. The most recent official publication gives the freight on breadstuffs as follows: Going upstream, 1.253 kopecks² per pood per verst, or about one-sixth cent per ton per mile, and downstream a little less; above Rybinsk, by means of horse towing upstream, 1.73 kopecks per pood per verst; on the Kama, by means of steam tugs downstream, 1.242 kopecks per pood per verst.

RAILWAYS.

The real center of the railway system in the Russian Empire is the city of Moscow, on account of its geographical location.

Leading from St. Petersburg in different directions there are four through lines of railway, viz: (1) The St. Petersburg-Moscow-Nizhni-Novgorod Railroad, called the Nicholaevsk line; (2) the St. Petersburg-Warsaw Railroad; (3) the Baltic Railroad; (4) the St. Petersburg-Helsingfors Railroad, also called the Finland Railroad. The first three lines of railroad are controlled by the Government; the last line by a private company.

TERMINI AND MAIN POINTS.

The termini of the above lines of railroad are partly indicated by their names. (1) The termini are St. Petersburg and Nizhni-Novgorod, at which latter place the road communicates with steamship navi-

¹1 verst = 0.683 mile.

²The kopeck, according to the consul-general's valuation, equals one-half of a cent.

gation down the Volga River as far as Astrakhan and the Caspian Sea, and also up the Kama River, a tributary of the Volga, as far as the city of Perm, the starting point of the Ural Railroad. (2) The termini are St. Petersburg and Warsaw, connecting at the latter place with the Warsaw and Vienna Railroad. (3) The termini are St. Petersburg and Riga, with a branch to Baltic Port on the Gulf of Finland. (4) The termini are St. Petersburg and Helsingfors, connecting at Rikhimiaki with a railroad line to Nicholaistadt.

The total length of the St. Petersburg-Nizhni-Novgorod line is 1,035 versts, or 686.205 miles. The main points touched by this line, beginning at St. Petersburg, with the distances between them, are: Chudovo, 73 miles; Medvedevo, 126 miles (from which point a line of railway 185 miles long runs to Rybinsk, connecting with steam navigation on the Volga); Ostashkovo, 76 miles (from which point a railroad line leads to Rzhev, 63 miles distant); Tver, 26 miles; Moscow, 104 miles; Vladimir, 117 miles; Kovrov, 43 miles (with a line of railroad 67 miles long running to Mourom on the Oka); Nizhni-Novgorod, 125 miles.

The total length of the St. Petersburg-Warsaw line (with a branch to Virballen, by way of Kovno, a little over 100 miles long) is 800.241 miles. The main points touched, starting from St. Petersburg, with the distances between them, are: Gatchiwo, 28 miles; Pskov, 142 miles; Dvinsk, or Dunaburg, 160 miles; Vileika, 102 miles (from which point a great line of railroad, controlled by the Government, leads to the Azov Sea); Vilno, 6 miles (with a Government line of railroad branching to Rovno, 320 miles distant); Grodno, 98 miles; Belostok, 52 miles, and Warsaw, 108 miles.

The distance from St. Petersburg to Virballen, on the Prussian frontier, is 540 miles. From the station of Koshedary, on the Virballen branch, a line of railroad leads off to Libau, 190 miles distant. Libau is now the most important port on the Baltic, being open for navigation during the whole year. At Dvinsk the St. Petersburg-Warsaw Railway is crossed by the great connected line of railroads from Riga, via Vitebsk and Orel, to Tsaritsine on the lower Volga.

The total length of the Baltic Railroad, with its several branches, is 568 versts, or 376.584 miles. The main points touched, starting from St. Petersburg, with the distances between them, are: Narva, nearly 100 miles; Taps, 82 miles; Reval, 48 miles; Baltic Port, 30 miles; Juriev, or Dorpat, 70 miles from Taps; Walk, 52 miles; Riga, 112 miles; Pskov, 90 miles from Walk. Riga is connected with the Libau Railway by a line 85 miles long, running through Mitau.

The total length of the Finland line is 425 versts, or 281.775 miles. The main points, starting from St. Petersburg, with the distances between them, are: Wiborg, 82 miles; Rekhimiaki, 155 miles; Helsingfors, 46 miles.

NUMBER OF TRACKS.

Of the above-mentioned roads, the lines having double tracks are those from St. Petersburg to Moscow and from St. Petersburg to Warsaw. On the Finland line a double track is laid only from St. Petersburg to Belo Ostrov, and on the Baltic line from St. Petersburg to Gatchino. There is now a law in Russia which provides for the laying of a double track whenever the gross income on any railroad line reaches the sum of 9,000 rubles a year per verst.

FREQUENCY OF COMMUNICATION.

There are six daily passenger trains from St. Petersburg to Moscow, two from Moscow to Nizhni-Novgorod, three to Reval, one to Riga, two to Helsingfors, and three to Warsaw and Virballen.

PASSENGER RATES.

Passenger cars are of three classes, the fare being 3 kopecks ($1\frac{1}{2}$ cents) per verst (0.663 mile) in the first class, $2\frac{1}{2}$ in the second, and $1\frac{1}{2}$ in the third in ordinary passenger trains; but there is a Government tax on railroad tickets, amounting to 25 per cent on tickets of the first class and 15 per cent on tickets of the second class, tickets of the third class being free, which tax is always added to the fare. One pood, or 36 pounds, of passenger baggage goes free. The excess is subject to a charge of 1 kopeck ($\frac{1}{2}$ cent) per 10 pounds for every 16 versts, or a little over 10 miles. The passenger fare on fast trains (kourierski poezd) and mail trains (pochtovyi) is somewhat higher.

The traveling public of the well-to-do class and tourists generally ride in the second class.

The following tables show the passenger fare in the first and second classes between the terminal points and the more important intermediate stations, in Russian currency, which is fluctuating in value; but the traveler will not go far astray if he considers the ruble (100 kopecks) equal to 50 cents in American money; hence, 1 kopeck is one-half of a cent.

Special passenger trains.

From St. Petersburg to—	First class.			Second class.	
	Fast trains.	Mail trains.	Passenger trains.	Mail trains.	Passenger trains.
	Rubles.	Rubles.	Rubles.	Rubles.	Rubles.
Chudovo		4. 16	3. 82	3. 13	2. 78
Ostashkovo		15. 30	14. 03	11. 48	10. 00
Tver	22. 40	16. 80	15. 40	12. 60	10. 00
Moscow	30. 20	23. 65	20. 76	16. 99	13. 21
Nizhni Novgorod.....			39. 13		27. 69

General passenger trains.

Stations.	First class.	Second class.	Stations.	First class.	Second class.
Moscow to—	<i>Rubles.</i>	<i>Rubles.</i>	St. Petersburg to—	<i>Rubles.</i>	<i>Rubles.</i>
Vladimir	6.64	4.98	Helsingfors	15.00	9.30
Kovrov	8.89	6.66	Narva	5.63	4.23
Nizhni-Novgorod	15.38	11.53	Taps	10.28	7.71
St. Petersburg to—			Reval	12.98	9.74
Gatchino	1.58	1.19	Baltic Port	14.67	11.00
Pskov	9.64	7.23	Jurlov	14.26	10.70
Dvinsk	18.64	13.98	Riga	20.40	15.31
Vilno	24.68	18.51	Abu	18.10	11.30
Koshedary	27.04	20.28	Vladikavkas	38.63	24.78
Kovno	28.31	21.24	Kiev	58.61	41.73
Virballen	31.35	23.51	Odesa	72.94	54.71
Libau	32.44	24.34	Orenburg	76.58	55.88
Grodno	30.19	22.64	Rostov on Don	71.31	51.88
Belostok	33.11	24.84	Sebastopol	77.78	56.78
Warsaw	39.21	29.41	Kharkov	51.24	36.88
Wiborg	5.30	3.30	Tsaritsine	61.51	44.56
Rekhimlaki	12.90	8.10			

NEW ZONE SYSTEM OF PASSENGER CHARGES.

A new schedule of passenger rates is in preparation, to go into effect on the 1st of January next. The principles agreed upon by a railroad conference recently held are as follows: The passenger fare of the third class forms the basis. For the first 160 versts (106.08 miles) the fare is 1.4375 kopecks per verst, or, roundly speaking, 1 cent per mile; that is, 2.30 rubles, or \$1.15, for the whole distance. For the next 140 versts (92.82 miles) the fare is 0.9 kopeck per verst, or 1.26 rubles (63 cents), for the whole distance, being about two-thirds of a cent per mile. The fare for the distance of 300 versts, or 198.90 miles, is therefore 3.5 rubles (\$1.75). The fare is not calculated per verst after the first 300 versts, the distances being divided into zones of 25 versts each, and the additional fare is 20 kopecks per zone or fraction of a zone.

The passenger fare of the third, second, and first classes stands in the proportion of 1, 1.5, and 2.5. For each zone of 25 versts the second-class fare is 30 kopecks, and the first class 50 kopecks.

The State tax levied on passenger fare is 15 per cent for all three classes. This is also levied on passenger baggage at the rate of one-twentieth kopeck per verst for every 10 pounds to a distance of 3,000 versts. For the first zone of 25 versts the same charge is made as for the first 300 versts, namely, 17.25 kopecks, including 15 per cent State tax. For every further zone $1\frac{1}{2}$ kopecks per 10 pounds is added.

FREIGHT CHARGES.

Freight is divided into fast and slow, as elsewhere. Charges for fast freight are uniform, namely one-sixth kopeck (one-twelfth of a cent) per pood per verst (36.112 pounds for 0.663 mile). A Government tax of 25 per cent is also charged.

Slow freight is divided into twelve classes, on which the freight per pood and verst is as follows:

Class.	Kopeck.	Class.	Kopeck.
I.....	✱	VII.....	✱
II.....	✱	VIII.....	✱
III.....	✱	IX.....	✱
IV.....	✱	X.....	✱
V.....	✱	XI.....	✱
VI.....	✱	XII.....	✱

For longer distances there is a reduction of charges on freight included in Classes I to IX, as follows:

Over 200 versts, 10 per cent; over 500 versts, 15 per cent; over 1,000 versts, 20 per cent; over 1,500 versts, 25 per cent; over 2,000 versts, 30 per cent.

CLASSIFICATION OF FREIGHT.

CLASS I.—Dried fruit, groceries, clothes, trimmings, perfumes, cosmetics; explosives, fireworks, grape wine, liquors (whisky excepted); wax and honey, fancy goods, notions, trinkets, smokers' articles, umbrellas, parasols, fishing utensils, household goods, traveling requisites, musical instruments, clocks, watches, mechanical and scientific apparatus; office supplies, unframed pictures, gums, glue, books, school apparatus, skins, leather, leather goods; ivory, amber, horns, tortoise shell; lamps, lanterns; cloth, textile fabrics, mattresses, all kinds of bedding (except gutta-percha), furniture (iron and cane furniture excepted); metal and metal goods (with a few exceptions), models, some druggist goods; copper, brass, bronze, brass and bronze goods; furs (with a few exceptions), footgear (except rubber goods), lead, lead manufactures, arms, feathers, down, porter, ale; clothing, underwear, wool and silk thread, rubber goods; smoked and conserved fish, caviar, crawfish, glass and glassware (with a few exceptions); foreign leaf tobacco, cigars, cigarettes, oranges, pineapples, lemons, olives, pomegranates; hops (not pressed); church articles, precious stones, precious metals, jewelry, silk and hair, brushes, bristles; equipages, vehicles and their belongings; tarpaulin covered with gutta-percha.

CLASS II.—Cucumbers and a few other vegetables, paper and cardboard in boxes, cardboard articles, hammocks, nets, articles made of rope (not specially mentioned in Class IV), common whisky in bottles, matting, weights (not copper), cork bark, wooden cornices, wooden yokes, wheels without tires (painted and polished), wooden boxes, rifle stocks, fellies, finished thills, cork soles, picture and mirror frames, frames for lounges and other furniture, door and window frames, wooden trunks with iron trimmings, bath tubs, velocipedes, ventilators, spindles, shafts, tin plate, tubes, metal signs, augers, ginlets, iron articles, enameled iron, galvanized iron, iron covered with copper and rubber, locks and keys, all articles of tin plate (not specially men-

tioned), wire and bells, blank swords, steel bells, skates, grave crosses, iron and steel furniture, saws, cutlery (not specially mentioned), axes, iron monuments, trays, carriage settings, kitchen iron, tin plate, cast iron, door and window trimmings, articles of wire, steel carriage springs, drills, steel articles (galvanized, tin-plated, and enameled), gun barrels, iron stirrups, metal springs, presses, tin-plated articles, iron safes, capstans, iron brushes and tongs, iron boxes, vaseline, wax, kerosene, margarine, paraffin, naphtha oil, spermaceti, serpentine stone, malachite, lapis-lazuli, jasper, stone articles (not packed), oilcloth, tents, sails, coarse cloth, dynamo-electric machines, sewing machines, knitting machines, babbitt metal, type, type metal, metal refuse, raw alcohol, albumen, ammonia, polishing paper, shoe blacking, tartar, glucose, acids, copperas, Iceland moss, arsenic, emery, glass powder, spirits turpentine, wood, alcohol, polishing powder, unwrought bronze, raw furs, fishing articles, wooden cages, cane articles, carpets and rugs of cocoa fiber, baskets (except those made of wire), cane rugs for sugar refineries, furniture made of cane, twisted articles of wire, straw, grass, withes, etc.; yarn, thread, flowers, sieves, wax candles, varnish, spirits (not in casks), Russian tobacco, grass fiber, dry plants, seaweed, wadding, all sorts of wool, camel's hair, goat hair, cow hair, tails of cattle.

CLASS III.—Tarpaulin, liquors in casks, earthenware, terra-cotta ornaments, terra-cotta stoves, crucibles, smoking pipes, batteries for warming and ventilation, iron axletrees, tin pails, iron gates, digging tools, iron chimneys, iron doors, signal disks, heating tubes, fireplaces, boilers, valves and lids of metal, pinchers, ladles, paddle boxes, metal receptacles for rubbish, iron bedsteads, portable forges, iron castings, iron hoops, casings, eaves, stairways, shoes for sledges, iron plugs, steel springs, iron frames, retorts, clasps, coast telegraphs, wire brushes, iron and steel spokes, steel tubes, iron cylinders, iron bottom plates, seal and whale blubber, crude earths, wax, fish fats, stearin, schist, glimmer, chemicals, colors, sumac, lead extract, elder flowers, lime flowers, latten and copper plate, unwrought latten and sheet tin, refuse of metals, crude copper and brass, slake of copper, crude pinchbeck, wall paper, leaden and zinc ash, scoria, beer, Russian porter, crude and manufactured lead and zinc, candles (except wax candles), alcohol (in barrels), matches, glass jars, glassware for table and kitchen use, lamp glass, green bottle glass, clover and lucerne seed, grass seeds, oil seeds (not specially mentioned), vegetable seeds, common Russian tobacco (from American seed, in leaves, bunches, and packages), snuff, china ware (except telegraph insulators), fresh fruits (except those mentioned in Class I), jute, eggs.

CLASS IV.—Vermicelli, macaroni, coopers' ware, paper and cardboard (except as mentioned in Class I), mineral and fruit waters and other cooling drinks (except cider and fruit kvas), nearly all kinds of wood and manufactures of wood (except those mentioned in Class V), oleine, paraffin, precious stones, minerals (not mentioned in other

classes), lumber and all building material of wood, coarse crash, sail-cloth, striped linen, handmade coarse linen, hempen cloth, mustard oil, castor oil, cocoa oil, hemp oil, flax oil, poppy-seed oil, and other oils (not mentioned in Classes I or III), bitter salt, borax, glycerin, tanning wood, bleaching lime, copra, naphthaline, chamomile, sandalwood, saltpeter, refined turpentine, sea salt, purified sulphur, Brazil wood, soap (except toilet soap), bags and sacks, meat and game (in every shape), leather cuttings, straw (not pressed), wormwood, fodder, unpressed grass and hay, rags, green apples, cotton, cotton waste, bread, parquets, washboards.

CLASS V.—Alabaster, gypsum, asbestos, chalk, cement, asphalt, asphalt articles, earthen pots, earthenware (with white polish), graphite, wooden oars, wooden gates, wooden nails (for vessels), skids, wooden poles, wooden ladles, wood coach boxes, wood wheels without tires, lasts, troughs, tubs, wood grave crosses, wood household articles (not mentioned in other classes), wood spokes, wood steps, wood tubes, beehives, shields, firewood, animal refuse, bones, bark, brooms, moss, leaves, ammonia water, tar water, glauber salt, other drugs and chemicals, earth colors, Campeche wood, sandalwood (in bulk), Chile saltpeter, soda, refuse of soda, Brazil wood (in bulk), bast and bast articles, flour, starch, paper cuttings, horn cuttings, live flowers, live plants (not mentioned in Class II), sugar, treacle, molasses, table salt (in packages), tree seeds, pressed fodder (grass), pressed wormwood, pressed straw and hay, vinegar, telegraph insulators, charcoal.

CLASS VI.—Oil cakes; filter stone, millstone; crude sulphur, greens, vegetables, and mushrooms (except those mentioned in Class VIII) ashes, dross, small beer, kras, crude salt, tarred roofing paper, asphalt.

CLASS VII.—Brick, tile, drainage tiles, earths (except coloring stuff), common stone and minerals, ocher, turf powder.

CLASS VIII.—Pickled watermelons, melons, sour cabbage, salted and pickled cucumbers (in casks), pickled pumpkins, residues of malt and grapes, liquid yeast, fragments of glass and porcelain, chaff, bran, sugar beets, cabbage (except Brussels and cauliflower), green cucumbers.

CLASS IX.—Fireproof and fire extinguishing compositions, ores of all kinds, kindlings.

CLASS X.—Raw ground plaster in bags or bulk, fertilizers, coal and turf.

CLASS XI.—When forwarded by car loads exceeding a certain distance, which is variable in the different cases. Brick, tiles, drain tiles, lumber, building material (wood), articles made of wood, cordwood, common bone, wormwood, charcoal. Some other goods are rated according to this class from certain stations.

CLASS XII.—This class embraces goods carried by the car load a certain distance, which is variable, viz: Oil cake, malt cake, broken glass and pottery, chaff and bran, common brick, roofing tile, all kinds of earth and sand, common stone and minerals, cane and reeds, grass

used in manufacture, cane furniture and articles of any sort made of cane, reeds, straw, withes, or grass.

DIFFERENTIAL RATES.

Besides the normal freight rates, as shown in the above classifications, there are many special or differential rates relating to certain classes or subdivisions of freight when carried by the car load, differing according to distance, which latter differences are extremely numerous and seem to be quite arbitrary. For instance, plaster belongs to Class V carried to any distance not exceeding 170 versts; above 170 to 340 versts one one-hundredth kopeck per pood per verst is added to the freight for 170 versts, which is 7.08 kopecks per pood; for distances between 341 to 681 versts, an addition of one one-hundredth kopeck per pood per verst is made to the freight for 340 versts, which is 8.78 kopecks per pood; for distances exceeding 681 versts this article belongs to Class X.

Some articles are entirely omitted from the normal classification, being subject to differential rates. The principal articles of that kind are the following:

(1) Ropes and cables, except wire ropes, when carried for a distance not exceeding 450 versts, pay such charges as are provided for Class IV of freight; when carried for a distance of 451 to 800 versts, one-sixtieth kopeck per pood per verst is added to the freight for 450 versts, which is 22.50 kopecks per pood; when the carriage exceeds 800 versts they are rated as freight of Class V.

(2) Agricultural tools, implements, and machines, when shipped to a distance not exceeding 180 versts, belong to Class V; above 180 to 550 versts, one-fiftieth kopeck per pood per verst is added to the charge for 180 versts, which is 7.50 kopecks per pood; for a distance of 551 to 1,745 versts one one-hundredth kopeck per pood per verst is added to the charge for 550 versts, which is 14.90 kopecks per pood; for distances exceeding 1,745 versts they belong to Class X of freight.

(3) Machinery (except agricultural), parts of machines and attachments are mostly subject to the following rates: For a distance not exceeding 540 versts they belong to Class III; from 541 to 677 versts one one-hundredth kopeck per pood per verst is added to the charge for 540 versts, which is 30.60 kopecks per pood; exceeding 677 versts they belong to Class IV.

Live animals of the small kind pay one-half of a kopeck per head per verst; horses, mules, asses, ponies, and camels, 3 kopecks per head per verst. Neat cattle have special rates.

CHARLES JONAS,

Consul-General.

ST. PETERSBURG, *July 18, 1894.*

SUPPLEMENTARY REPORT.

Railways in Russia are owned mainly by the Imperial Government, but some by private corporations. On January 1, 1895, the total length of all the Russian railroad lines was 34,670 versts (22,986 miles). Of this mileage the Government operated 16,866 versts (11,182 miles), of which 3,472 versts (2,302 miles) were of double track, including the Transcaspian Military Railway (1,343 versts, or 890 miles) and railways in Finland (2,108 versts, or 1,398 miles). The private corporations operated 14,353 versts (9,516 miles), of which 3,826 versts (2,537 miles) were of double track.

On the 1st of April, 1895, the total length of the Government lines was 20,290 versts (13,452 miles), of which 4,759 versts (3,155 miles) are of double track, including the Transcaspian Military Railway (1,343 versts, or 890 miles) and lines in Finland (2,108 versts, or 1,398 miles). The length of the private railways was 11,115 versts (7,369 miles), of which 2,539 versts (1,683 miles) were of double track. The total length of all the railways in the Empire of Russia was, on the 1st of April, 34,856 versts (23,110 miles), showing an increase in the length of 186 versts (123 miles) from January 1 to April 1, 1895. On January 1, 1893, the total length was 20,982 miles, and on January 1, 1894, 22,091 miles, being an increase of 1,109 miles in 1893. On January 1, 1895, the total length was, as stated before, 22,986 miles, an increase of 985 miles in the year 1894.

So far as known, there are 6,000 locomotives and 120,000 cars now in use in Russia.

The Vladikaukaz Railway Company, which operates 812 miles of railroad, has received a sanction from the Government to build a new branch, which will be 336 miles, uniting Tsaritsin, on the Volga, with Tirhoretsk station, and to be completed within three years. This new line will give a third alternative direct route to the Black Sea, and it is expected will greatly relieve the annually congested traffic in grain destined for export from the southern ports. The capital has been raised by the issue of obligations guaranteed by the Government.

JOHN KAREL,
Consul-General.

ST. PETERSBURG, *May 29, 1895.*

ODESSA.

All the railways in Russia are under the control of the Russian Government. The tariffs of railways open to the public, whether owned by the State or by private individuals, are subjected to Government supervision and guidance. By the word tariff, is meant not only the pay-

ment for carriage but also all supplementary and other dues levied by the railway lines and the regulations applying to these rates and dues. On January 1, 1894, about one-half the railways belonged to the Russian Government, and on January 1, 1895, the Government will own nearly two-thirds of all the railways.

LENGTH OF LINES.

The names, terminal points, and length of lines are given below. The lines at present owned by the Government are marked with an asterisk.

Name of line.	Terminal points.	Length.
		<i>Miles.</i>
Baltic.....	St. Petersburg and Baltic Port	377½
Baskuntchak *	Baskuntchak and Vladimir	35½
Borowitchi	Borowitchi and Onaloroka	19½
Warsaw	Warsaw and Vienna	308½
Warsaw	Warsaw and Tereapol	384½
Vladikavkas	Novorossisk and Petrousk	604
Griasy	Griasy and Tzaritzyn	574½
Ianokoy *	Ianokoy and Feodosia	72½
Dvinsk	Dvinsk and Vitebsk	162½
Donetskoj	Marinpol, Twerenow, and Slaviansk	410
Ekaterininsky *	Dohnskaya and Ekaterinoslav	332½
Kavkasjy *	Poti, Baku, and Batoum	664
Transcaspijan *	Usun Ada and Samarcand	896
Ivangorod	Ivangorod and Dombrowsky	300
Ivinovsky		22
Kiev	Kiev and Voronesh	294½
Koslovo	Koslovo, Voronesh, and Rostoff	578½
Kursk *	Kursk, Karkov, and Azov	510
Liban *	Liban and Romny	794
Lodrinakya		17½
Lozovo	Lozovo and Sebastopol	421½
Mitau	Moscow and Riga	86
Moscow	Moscow and Brest	682
Moscow *	Moscow and Kursk	334½
Moscow	Moscow, and Nizhni-Novgorod	282
Moscow	Moscow, Yaroslav, and Vologda	360
Mouremsky *		68
Nicolaevsky	St. Petersburg and Moscow	406
Novgorod		104½
Novotorskiy *	Rzkeve and Viazma	162½
Obojansk		20
Orel	Orel and Vitebsk	325½
Orel *	Orel and Griaze	230½
Puloaskaina *	Rovno, Baranovitch, Bialostock, and Brest	954½
Privilisliansky	Reuel and Warsaw	328½
Pskov *	Pskov and Riga	246
Riga *	Riga and Doinak	155½
Riga *	Riga and Tuckum	40
Rybinsk	Rybinsk and Bologoy	184½
Riazan *	Riazan and Oural	480
Samara	Haloust with Orenberg line	940
St. Petersburg	St. Petersburg and Warsaw	575½
Syzsan *	Syzsan and Viazma	860½
Oural *		673½
Fastov		220½
Finland		1, 109½
Kharkov *	Kharkov and Nicolaiev	688½
Shina	Shina and Ivanova	114
Southwestern	Odessa, Graen, Noloehisk, Kiev, and Elizabethgrad	2, 175

The termini and main points touched by the Southwestern Railway are: (1) Odessa; (2) Reni (Roumanian frontier); (3) Ungenny (Roumanian frontier); (4) Wolochisk (Austrian frontier); (5) Radzurlln (Austrian frontier); (6) Graen (Prussian frontier); (7) Kiev; (8) Elizabethgrad.

The total length of line is 2,175 miles, and the distance between main points is as follows:

From—	To—	Dis- tance.	From—	To—	Dis- tance.
Odessa.....	Græn.....	<i>Miles.</i> 745	Odessa.....	Kiev.....	<i>Miles.</i> 409
Do.....	Wolochiak.....	341	Do.....	Elizabethgrad.....	296

The double lines are: Bialostock to Brest, Odessa to Reuel, Shmerinka to Wolochisk, Rasdelnia to Bendare, Kasatin to Kiev.

There are twelve arrivals and twelve departures of trains daily from the southwestern depot at Odessa.

PASSENGER RATES.

The first-class rates for passengers on all railways is 3 kopecks¹ per verst (0.663 mile); for second-class passengers, 2½ kopecks, and for third-class passengers, 1½ kopecks, with an allowance of 36 pounds of baggage free for each passenger, extra baggage being charged at the rate one-half kopeck per verst for every 9 pounds or less.

FREIGHT RATES.

The freight rates are 8 kopecks per head per verst for work cattle, such as oxen, cows, bulls, horses, and mules; 1 kopeck for calves and swine; one-quarter kopeck for sheep, goats, and dogs. For slow goods trains three maximum rates are fixed, according to the three classes of goods circulated in trade, viz: First-class goods, one-twelfth kopeck; second-class goods, one-fourteenth kopeck; and third-class goods, one-twenty-fourth kopeck. The goods enumerated in these three classes, however, only include 130 denominations, and this is not by any means a complete list of the articles transported by the Russian railways. The first class includes fifty-two varieties; iron and lead wares, copper, cast iron, metals (both wrought and unwrought), cotton yarn, woolen goods, foreign linen, wines, tea, coffee, sugar, drugs, and colonial merchandise, manufactured goods, mirrors, tobacco, and certain other more costly goods. The second class is made up of forty-four articles, such as ores, charcoal, cotton, building timber, pig iron, bar and sheet iron, lead in pigs, flax, hemp, cloth and linen made in Russia, etc. The third class consists of all kinds of cereals, flour, salt, vegetables, pressed and packed hay, tow, rags, lime, wood, stone, sand, clay, coke, coal, etc., thirty-four varieties in all. Goods not mentioned in any of these classes must be assigned to the one having the most analogy to them. These rates refer to slow goods trains for distances less than 200 versts (132.6 miles). For longer distances the freights are lowered in the following proportions: 10 per cent when the distance exceeds

¹ The consul values the kopeck at one-half cent, which would give the paper ruble a value of 50 cents.

200 versts (132.6 miles); 15 per cent when it is more than 500 versts (331.5 miles); 20 per cent when above 1,000 versts (663 miles); 25 per cent when more than 1,500 versts (994.5 miles); and 30 per cent when it exceeds 2,000 versts (1,326 miles), with the object that rates for short distances shall not be proportionally lower than those for long distances. The reductions are made on the entire distance traversed, and are not calculated separately for each line and section of line.

The rate for goods conveyed at the speed of passenger trains is one sixth of a kopeck per pood (36.112 pounds) per verst.

GOVERNMENT REGULATIONS.

Previous to the Government control of the railways, the competition between the different lines was one of the principal causes of disorder and disagreement in railway rates. In order to avoid this, the tariff (Government) regulations provided general bases, which were put into force in March, 1890. These regulations comprised the following: (1) The institution in various directions of equal or corresponding tariffs; (2) a corresponding distribution of freights in one or another direction; (3) a corresponding distribution between competing lines of the direction and receipts for conveying goods in one or another direction.

In the absence of Government control over the tariffs the railway interests suffered, among other things, from an irregular and unjust distribution of charges for conveying goods by direct communication between separate lines, some railways taking advantage of their geographical position and advancing most unjust demands concerning their share of the receipts for direct transport. This question was taken up by the Government tariff committee as soon as they commenced operations, and it was determined that the share of each line should be proportional to the distance the freight had traveled thereon. The only exception to this was in case the distance traveled should be less than 120 versts (79½ miles). For the transport of wheat, coal, anthracite, coke, and coal briquettes, a premium was granted in the following terms: Should the distance the goods were conveyed be under 70 versts (46.4 miles) the carriage is computed according to the limiting tariff of the line for the distance traveled, but not higher than one twenty-fourth kopeck per pood (36.112 pounds) per verst for wheat freights and one fifty-fifth kopeck for the other goods mentioned. Should the distance exceed 70 versts the carriage for the first 70 is calculated in the manner just described and the extra distance is paid out of the remainder of the general carriage payment, proportionally to the distance traveled, even should the total distance along the line from which they were dispatched be less than 120 versts (79½ miles).

INTERIOR WATERWAYS.

The total extent of natural and artificial waterways in European Russia amounts to about 56,000 versts (37,128 miles), of which rafting rivers form 23,000 versts (15,249 miles), and navigable rivers 33,000

versts (21,879 miles), while steamers cover a distance of only 20,000 versts (13,260 miles). The freight rates on these waterways fluctuate according to the amount of business and the state of the water and fair ways. The distance of the transport is of little consequence. The most important are the freights on breadstuffs, which in 1891 were as follows: On the Volga, below Rybinsk, the freight on cereals transported in steam tugs going upstream was one two-hundred-and-fifty-third kopeck per pood per verst (36.112 pounds per 0.663 mile); going downstream, one two-hundred-and-twenty-fifth; by rafts, one three-hundred-and-fifty-third. Above Rybinsk, by means of horse towing, upstream, one seventy-eighth kopeck, and by windlass and capstan towing, one-eightieth kopeck. On the Kama, by means of steam tugs, with the current, one two-hundred-and-seventeenth kopeck. On the Oka, by raft, one forty fifth kopeck, and in steam tugs upstream, one-fiftieth kopeck. On the West Dniwa, with the current and with oars, one forty-fourth kopeck. On the Dniester to Odessa, by steam tugs, downstream, one forty-first kopeck. On the Dnieper, below the cataracts, to Odessa, on sails and steam tugs, going downstream, one eighty-second kopeck; above the rapids, by rafting, one eighty-eighth kopeck; and by steam tugs, against the current, one forty-ninth kopeck. On the Don, against the current, with the aid of horse towing, one seventy-second kopeck, and with the current, as far as Rostoff, one one-hundredth kopeck per pood per verst.

THE VOLUNTEER FLEET.

The volunteer or patriotic fleet, as it is called, came into existence in 1878, during the last Russo-Turkish war, with the object of performing the duty of cruisers in war time and having commercial objects in time of peace. Large sums of money from all over Russia were subscribed toward establishing this fleet, and every year these contributions continue to flow in. The vessels make regular voyages to China and the Russian possessions in the Far East. The voyage lasts forty days and is made between Odessa and Vladivostok. At present ten steamers, having a total tonnage of 34,000, are engaged in this trade. The names of these steamers are of interest as showing the government, district, or town from whence the funds for their construction were derived. They are *Kostroma*, *Moskva*, *Nizhni-Nogorod*, *Orel*, *Petersburg*, *Rossia*, *Saratov*, *Tambov*, *Yaroslav*, and *Vladivostok*. Two new steamers, now being built in England, will be added to the fleet in the spring, and it is already announced that, commencing in April next, a monthly service between Odessa and the Far East will be inaugurated. The volunteer fleet is every year increasing its activity in the conveyance of passengers and goods from the ports of the Black Sea to Vladivostock and Nikolaevsk. The number of persons carried, hardly reaching 1,300 in 1882, in 1893 rose to 8,000, while the quantity of cargo for the same period rose from 4,800 to more than 800,000 poods. The distance traveled is

10,000 miles. The cabin passenger pays 500 rubles (\$250), including food for the voyage from Odessa to Vladivostok; the deck passenger, 100 rubles for the same distance, also with food. Cargo is charged 30 to 40 kopecks a pood (36.112 pounds).

OCEAN AND GREAT COASTWISE LINES.

La Compagnie Russe de Navigation à Vapeur et de Commerce.—This company is the largest of the steam navigation companies in Russia. Its headquarters are at St. Petersburg, but its principal and most important office is at Odessa. It has under its control in the Black Sea and the Sea of Azov 40 passenger steamers (first and second class), having a displacement, when loaded, of 84,967 tons and an indicated horsepower of 43,630; also 6 mixed passenger and cargo boats, having a displacement of 13,800 tons, with 3,720 horsepower; 14 cargo boats, with a displacement of 14,500 tons and 4,300 horsepower; 3 tank (petroleum) steamers, having a displacement of 8,970 tons and 3,700 horsepower; 13 steam tugs, with a displacement of 2,880 tons and 3,660 horsepower; 7 steam launches, with 227 tons displacement and 604 indicated horsepower. There is a direct weekly line of steamers between Odessa and Alexandria (Egypt), calling at Constantinople, Smyrna, Chio, and Piræus; and a weekly line between Odessa and Alexandria, which calls at Constantinople, Dardanelles, Mount Athos, Salonica, Piræus, Chio, Smyrna, Tripoli, Berlut, Jaffa, and Port Said. There is also a line of steamers (once a week) between Sebastopol and Constantinople; also a line between Odessa and Batoum, with stops at Constantinople, Iniboli, Sinope, Samsoun, Ordou, and Trebizonde, and at any other Turkish port on the Black Sea when it is necessary. There is also a line of steamers between Odessa and Batoum which stops at all of the Russian ports on the Black Sea and connects at Kertch with a line of steamers which stop at all of the ports on the Sea of Azof. There is a direct line between Odessa and Batoum, with stops only at Sebastopol and Yalta. The service between Batoum and Odessa, and vice versa, is five times weekly in summer and three times in the winter. The service on the Sea of Azof is usually closed by ice early in the month of December.

This company has also a line of boats between Odessa and Nicolaiev, between Odessa and Kherson, and between Nicolaiev and Kherson. From Kherson a line of boats runs up the Dneiper River as far as Alexandrovsk.

Other lines.—There are two or three smaller companies doing a freight and passenger service on the Black Sea, but the lines already mentioned are the principal ones.

There is a weekly service between Odessa and Danube ports by the Gagarine Line. The volunteer fleet, the Russian company, and the Gagarine Line are all subsidized by the Russian Government. The

Austrian Lloyds has a weekly service between Odessa and Danube ports; a French company has a regular line of steamers between Marseilles and Odessa, and an Italian company runs boats twice in each month between Odessa and Italian ports. The importance of Odessa as a shipping port will be best understood by a reference to tonnage and value of the articles exported. The tonnage for the year ending December 31, 1893, was 2,073,750. The value of the exports was \$46,861,880. More than one-half of this tonnage was carried on British steamers.

THOS. E. HEENAN,
Consul.

ODESSA, *December 18, 1894.*

THE GREAT SIBERIAN RAILWAY.¹

Soon after the annexation by the Russian Empire of those vast tracts of land known as the Amour and Littoral territories and the Ussuri country, a serious want was felt for better ways of communication to assist in retaining them, and to induce settlers to occupy and cultivate them. The first to interest himself in the matter of constructing a railway through Siberia was Count Muraviov Amoursky. After his successful expeditions on the River Amour, he reported that the channel of entrance into the river was unsatisfactory, whence came the idea of using the Bay of De Castri, in the Straits of Tartary, and of uniting it with Sophisk, on the Amour, by a carriage road which he recommended should be constructed in such a way that it could afterwards be converted into a railway. In 1857, therefore, surveys were made by Colonel Romanov looking to that end. This road, however, was not destined to be built, as the means requisite were not forthcoming.

Next, an Englishman named Dull suggested the plan of constructing a horse railway from Nizhni-Novgorod, through Kazan and Perm, to one of the Pacific ports, but this scheme did not find supporters. About this time, Mr. Collins, an American citizen, asked the Russian Government to grant him the right to form a stock company to operate under the name of the Amour Railway Company between Irkutsk and Chita. This proposition was duly examined by the ministry of ways of communication and also by the special Siberian committee on roadways, and was rejected.

A third proposal followed in 1858, this time looking to the construction of a railway between Moscow and the Tartar Strait. This scheme was proposed by Messrs. Morrison, Horn, and Sleigh, English capitalists, who, although asking no guarantee from the Government, demanded such considerable privileges that a grant would have ended in throwing the entire industry and trade for many years to come into foreign hands, and was accordingly rejected by the Government.

¹ Reprinted from *Consular Reports*, July, 1894.

In the same year, Sofronov brought forward a plan to build a railway from Saratov across the Kirghiz plains to Semipalatinsk, Minusinsk, Seleginsk, the Amour, and Pekin. This scheme met with innumerable objections, and, like many of the others, was not supported by sufficient evidence of capital. It therefore came to no practical end.

In 1862, a scheme was proposed by Kokorev & Co. looking to the uniting of the Volga and Obi basins, the two great rivers of European Russia and Siberia. This seemed to be more practical. Surveys were accordingly made from Perm through the Nizhni-Tagil works to Tiumen, a distance of 678 versts,¹ with a branch of 13 versts to Irbit. This plan was further studied by Colonel Bogdanovich, who, in 1866, reported to the minister of the interior in substance as follows:

After removing all difficulties in the way of furnishing provisions to the governments of Perm and Viatka, it is my belief that the only practical means of avoiding a similar famine to that of 1864 in the Ural country is by the construction of a railway from some of the interior governments to Ekaterinburg and thence to Tiumen. Such a road, should it be subsequently continued through Siberia to the Chinese frontier, would, in my opinion, acquire a vast importance for the development and safety of the country.

Accordingly, Bogdanovich was authorized to make surveys for the construction of a railway from Yershov through Ekaterinburg to Tiumen. The governor-general of western Siberia, Adjutant-General Khrushchov, took a deep interest in this subject, and in 1869 addressed a memorial to the Emperor, pointing out the necessity of a railway to connect Nizhni-Novgorod, Kazan, and Tiumen.

At this time, therefore, the question of building a Siberian railway had settled into three sharply defined routes. All three were to begin at Perm and end, the first and third at Tiumen, and the second at Bielozersk and the Tobol River. The first of these routes was named the northern, the second the middle, and the third the southern. After further consideration by the Government, it was deemed advisable to build only part of the line projected, namely, a road to join Kama with the Tobol River, a distance of 700 versts.

Surveys were made in 1872, 1873, and 1874 by the Government, and ended in the establishment of three principal routes: (1) Kineshma, Viatka, Perm, and Ekaterinburg, 933 versts; (2) Nizhni-Novgorod, Kazan, Krasnoufimsk, and Ekaterinburg, 1,172 versts; and (3) Alaty, Ufa, and Cheliabinsk, 1,173 versts. The committee of imperial ministers, after examination, decided, in 1875, to favor the Siberian Railway from Nizhni-Novgorod along the Volga to Kazan, Ekaterinburg, and Tiumen.

About the same time a petition was started for the construction of a road from Vladivostok to Lake Khanko, which, however, owing to the difficult position of the imperial finances, was postponed for further consideration. The Government continued to interest itself in the

¹ 1 verst=0.663 mile.

enlargement of the general system of railways which had reached Orenberg in 1877. The following year the Ural Railroad was opened, and in 1880 the magnificent bridge over the Volga, named in honor of the Emperor Alexander II, was completed. At the close of this year an imperial ukase was signed for the construction of a road between Ekaterinburg and Tiumen.

It may be interesting to note that, in 1880, the engineer Ostrovsky suggested a through line across Siberia, which almost exactly corresponds with the Great Siberian Railway as now in process of construction. In 1890, a special commission was formed under the Imperial Minister Vyshnegradsky, looking to the construction of this railway by foreign capital. Several Americans, together with other foreigners, thought seriously of forming a company for the construction of this road, but capitalists abroad hesitated to invest the money requisite for such a mammoth undertaking. A change in the imperial ministry soon after placed Serge Witte, former director of the department of railways, at the head of the ministry of finance. Minister Witte took the stand that work upon the Great Siberian Railway should begin at once, and that the road should be constructed by Russian capital and Russian engineers. Accordingly, on February 21, 1891, by direct order of the treasury, this plan was laid before the Emperor for approval. On March 17, 1891, in the name of the Czarewich, the question of constructing the Great Siberian Railway, as suggested by the present minister of finance, was decided in the affirmative. The imperial rescript was promulgated personally by the Czarewich on May 12, in Vladivostok, and His Imperial Highness laid the first stone of this mighty work, destined to take one of the foremost places among the important enterprises of the expiring century.

The work was divided into three parts. The first consisted of the western Siberian section, from Cheliabinsk to the River Obi (1,238 versts in length), and of the middle Siberian section, from the Obi to Irkutsk (1,754 versts), together with the completion of the Vladivostok-Grafskaya section, now nearly finished, and the building of a line to connect the Siberian Railway with the Ural mines. The second included the sections from Grafskaya to Khabarovka (347 versts), and from the station Mysovskaya, the commencement of the line on the other side of Baikal, to Sretensk (1,009 versts). The third included the building of the Circumbaikal road (292 versts), and the line from Sretensk to Khabarovka (2,000 versts). The first is under contract to be completed not later than 1900. This order of construction and division of the work was approved by imperial ukase on December 10, 1892.

GEOGRAPHICAL AND TECHNICAL FEATURES.

From Cheliabinsk to Kurgan the road departs from the straight line only when necessary to avoid local obstructions, such as lakes, marshes, and deep valleys. Farther on, it passes through Petropavlovsk to

Omsk, still adhering, as far as practicable, to a straight line, and when 5 versts from Omsk, it crosses the Irtysh on a bridge 2,100 feet long. Thence, the road leads across Barabinsk steppe through the governments of Tobolsk and Tomsk, through the town of Kainsk, and when nearing the village of Krivoschekov, it crosses the Obi on a bridge 2,800 feet long at verst 1,325.

The section from Cheliabinsk to the Obi runs, in general, through a very productive soil of chernoziom, while the climate is favorable to the growth of cereals. Through the entire length of the road, as far as Obi, there are no serious difficulties in the way of construction. The spanning of four large rivers, however—namely, the Tobol, Ishim, Irtysh, and Obi—requires the construction of earthworks and bridges. Because of the evenness of the surface, gradients are not greater than 0.0074 and the radii of the curves are 1,750 feet.

After crossing the Obi, the road leads through a hilly country and crosses five large rivers—the Obi, Tom, Yaya, Kiya, and Chulymsk. Nevertheless, the gradients are limited to 0.008 and the radii of the curves to 1,750 feet. From Achinsk to Irkutsk, a distance of 1,191 versts, the country becomes mountainous, and the road crosses two large rivers, the Chulymsk and Yenisei, and several of their tributaries. It is worthy of note that most of the Siberian rivers run from south to north, and therefore the line must intersect them at their summit levels. These levels of the branches of the Altai, Gremiachevsk, Yeniseisk, and Sayansk chains are high and narrow, and, consequently, the line from Achinsk to Nizhneoudinsk and from Uktouisk was planned with gradients of 0.015 and with curves of 1,050 to 1,000 feet. Through this country, therefore, the topographical conditions make the construction of the roadbed very expensive, the embankments sometimes reaching 70 feet in height.

The road crosses the Yenisei at verst 2,049, on a bridge 3,150 feet long. The highest point of this section is at verst 1,976, between the Little Ibruil and the Little Kemchug, where it is 784 feet above the River Chulymsk and 959 feet above the Yenisei. After crossing the Yenisei, the road winds along the heights near Krasnoyarsk, and begins to climb the summit level, first along the Berezovka River and thence along the valley of the Sitik, reaching its highest point at verst 2,116. It is necessary to cross the several tributaries of the Berezovka and the Sitik by numerous bridges. The length of this ascent is 67 versts, and eighty-two bridges and pipes are necessitated. After passing the town of Kansku, the line crosses the River Kan on a bridge 1,400 feet long. From Nizhneoudinsk to Uktouisk, the road runs through a more level country, crossing the rivers Uda, on a bridge 1,050 feet long, the Iya, on a bridge 700 feet long, and the Oka, on a bridge 875 feet long, the latter at verst 2,830, and passing several summit levels between these rivers. From the River Oka, the line passes across the country to Polovina station, at verst 2,968, where the technical features are those of mountainous sections. From Polovina station to Irkutsk, the

line is more level, having to cross only the rivers Belaya and Maltinka. The Irkutsk station is fixed at verst 3,065, 4 versts from the ferry across the Angara on the overland road from Moscow to Irkutsk and opposite the town itself.

From Irkutsk, the road wends its way to Lake Baikal, whose shore it follows for 162 versts, as far as the station of Mysovsk. Farther on, at verst 3,112, the valley of the Irkut takes the form of a mountain path through which the road will be hung in cuttings of the overhanging granite crags. At verst 3,146, because of the steepness and windings of the River Irkut, where the line crosses the Zyrkzunsk chain, it was found necessary to construct a tunnel 8,330 feet long, which will be bored with one continuous incline. The mountainous character of the country from the Kultushnaya to the Bystraya, 3,212 versts from Cheliabinsk, is continuous. From verst 3,212, the road winds along the shore of Lake Baikal, and in doing so crosses and pierces the branches of the mountain chains leading to the lake.

In consequence of these topographical features, the Irkutsk-Mysovsk section has been estimated to cost about 4,772,000 rubles.¹ The country through which this section passes is entirely barren, except the town of Irkutsk and some settlements on the shores of Lake Baikal. From Mysovsk Harbor the line follows the shore of the lake, and then the line of the River Selenga, which it crosses on a bridge 3,185 feet long. From this point it passes into the Valley of Uda, and thence along the River Pogromnaya. It then enters the Vitimsk plateau, winding along the River Domna, one of the tributaries of the Lena system. Passing the summit level between these rivers, the line climbs the eastern slope of one of the branches of the Yablonovoi chain, which serves as the summit level of the basins of the Lena and the Amour; that is to say, of the Northern and Pacific oceans. From this point the road descends, and winds round the hilly side of the town of Chita, on the bank of the River Shilka, to Sretensk. Because of the topographical difficulties, the Mysovsk-Sretensk section will cost 8,859,000 rubles.

The continuation of the Siberian Railway from Sretensk will be along the valleys of the Shilka and Amour, probably crossing the latter on a bridge 8,400 feet long at verst 6,350. The building of this branch will be subject to topographical conditions similar to those of the Mysovsk-Sretensk system. After crossing the Amour, the line follows the valley of the Ussuri, on the border of the Russian and Chinese empires, a distance of 400 versts. There are several large bridges planned to cross the Khor, Bikin, and Iman rivers. The road comes out of the valley of Suyfun River and passes along the shores of the Ouglov and Amour gulfs, terminating at Vladivostok, the station being on the Bay of the Golden Horn.

The total length of the Siberian Railway from Cheliabinsk to Vladivostok is 7,083 versts (4,696 miles) on the main line alone.

¹ 1 ruble = 50 cents.

For purposes of superintendence, the work is divided into seven sections, viz: The western Siberian, from Cheliabinsk to Obi (1,328 versts); the central Siberian, from Obi to Irkutsk (1,754 versts); the Baikal circuit, from Irkutsk to the pier of Mysovsk, on Lake Baikal (292 versts); the Transbaikal, from Mysovsk pier to Sretensk (1,009 versts); the Amour section, from Sretensk to Khabarovka (2,000 versts); the North Ussuri, from Khabarovka to Grafsk (347 versts); the South Ussuri, from Grafsk to Vladivostok (382 versts); total, 7,112 versts (4,715 miles), including the branches to the principal rivers intersecting the main line.

A table giving the estimated cost of the construction of the Siberian Railway, not including, however, all the expenses which this enterprise will entail, is given herewith. It is the intention to institute a number of auxiliary measures in connection with the road, looking to the improvement of the economical conditions and the greater prosperity of Siberia. For example, to construct a branch line between the Siberian and the Ural railways in the interest of the Ural Metallurgical Works, and to build river wharves and construct branch lines to them; to improve the Siberian rivers; to develop steam navigation on the river systems intersecting the road; to establish a route through the Northern Ocean to the mouths of the Obi and Yenisei; to assist colonization along the line; to encourage iron works to be established in Siberia along the railway; to equip and send out geological expeditions for studying the country, and to make exhaustive researches in the Amour tract. To carry out these auxiliary enterprises during the time allotted for the completion of the first section, 14,000,000 rubles have been set apart. Requisite sums will also be appropriated for similar improvements in the districts of the other sections. These expenses will be very great, and it is now impossible to give a reasonable estimate of the outlay. All this is exclusive of the estimated cost of the Great Siberian Railway, as shown in the following table:

Estimate of the cost of the Great Siberian Railway.

[As published by the ministry of finance.]

Class of work.	Cheliabinsk to Obi (1,328 versts.)		Obi to Irkutsk (1,754 versts.)		Irkutsk to Mysovsk (292 versts.)		Mysovsk to Sretensk (1,009 versts.)	
	Total cost.	Per verst.	Total cost.	Per verst.	Total cost.	Per verst.	Total cost.	Per verst.
	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>
Expropriation of land.....	387,857	292	299,727	171	48,970	168	501,695	497
Making the track.....	5,845,144	4,401	12,909,873	7,360	7,198,844	24,654	13,297,808	13,120
Construction works.....	8,932,135	6,726	16,544,912	9,738	7,116,950	24,374	9,869,832	9,782
Laying the line.....	3,923,854	2,955	4,464,685	2,545	742,049	2,541	2,931,002	2,905
Appurtenances of the line.....	178,140	133	257,701	147	36,675	126	198,523	167
Telegraph.....	367,773	277	358,074	204	70,201	241	242,106	240
Buildings along the line.....	709,360	534	849,227	484	196,860	674	587,480	582
Station buildings.....	2,012,500	1,515	2,767,225	1,578	557,300	1,906	1,867,450	1,851
Water supply.....	617,840	465	1,304,195	743	178,730	612	638,200	632
Station appurtenances.....	659,050	496	748,955	427	197,150	675	734,110	728
Administrative and unforeseen expenses.....	4,500,570	3,389	5,525,115	3,150	1,510,575	5,174	5,410,800	5,362
Rails and fastenings.....	8,583,922	6,464	11,550,900	6,585	1,867,108	6,394	6,442,416	6,383
Rolling stock and workmen.....	8,089,700	6,089	10,691,950	6,098	1,671,730	5,725	5,614,345	5,564
Carriage of rails, fastenings, etc.....	2,558,634	1,926	5,000,359	2,851	917,678	3,143	5,063,916	5,019
Total.....	47,361,479	35,662	73,272,898	42,072	22,310,820	76,407	53,300,763	52,834

Estimate of the cost of the Great Siberian Railway—Continued

[As published by the ministry of finance.]

Class of work.	Sretensk to Khabarovka (2,000 versts).		Khabarovka to Grafsk (347 versts).		Grafsk to Vladivostok (382 versts).		Total cost (7,112 versts).	
	Total cost.	Per verst.	Total cost.	Per verst.	Total cost.	Per verst.	Total cost.	Per verst.
	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>	<i>Rubles.</i>
Expropriation of land.....	1,000,000	500	76,000	219	247,604	649	2,561,889	360
Making the track.....	28,000,000	14,000	4,582,353	13,206	1,712,806	9,724	75,486,828	10,614
Construction works.....	30,000,000	15,000	3,320,712	9,570	2,657,280	6,960	78,441,921	11,030
Laying the line.....	6,000,000	3,000	1,344,325	3,874	1,189,780	3,116	20,395,675	2,896
Appurtenances of the line.....	320,000	160	86,722	250	62,270	163	2,108,031	156
Telegraph.....	480,000	240	104,252	300	118,420	310	1,740,880	245
Buildings along the line.....	1,000,000	500	314,400	906	218,375	572	3,875,682	545
Station buildings.....	3,600,000	1,800	881,250	2,542	1,170,150	3,065	12,856,575	1,808
Water supply.....	1,200,000	600	249,660	720	316,750	830	4,505,375	633
Station appurtenances.....	1,400,000	700	248,500	700	398,100	1,043	4,857,521	617
Administrative and unforeseen expenses.....	11,000,000	5,500	2,002,125	5,700	2,908,336	7,613	32,907,925	4,620
Rails and fastenings.....	12,765,528	6,383	2,254,200	6,496	2,443,851	6,401	45,595,250	6,456
Rolling stock and workmen.....	11,223,655	5,612	1,917,670	5,526	1,359,200	3,563	40,321,065	5,703
Carriage of rails, fastenings, etc.....	9,566,652	4,783	1,355,713	3,907	858,113	2,248	25,385,865	3,560
Total.....	117,555,835	58,778	18,738,682	54,002	17,661,051	46,275	350,210,482	49,242

PROGRESS OF CONSTRUCTION.

The Cheliabinsk-Omsk line is fast nearing completion. The middle Siberian section, the construction of which was begun in 1893, is now well under way. The ministry of ways of communication hopes to finish the Ussuri line before the term fixed, that is, before the autumn of 1894. The condition of the work on October 1, 1893, was, in general, as follows:

On the first section of the line, from Cheliabinsk to Omsk, which was begun in 1892, 80 per cent of the roadbed is completed. During the period from May 20 to October 1, 28 bridges were constructed on the same section, rails laid down for 240 versts, and telegraph communication opened up to the town of Omsk.

On the second section of the Western Siberian line 751,100 cubic feet more of earthwork were handled, 3 station buildings constructed, and all the necessary materials prepared.

On the first section of the Middle Siberian Railway, from Obi to Krasnoyarsk, final surveys have been made on 300 versts, and the remainder are now under the engineers, 833,000 cubic feet of earthwork were handled during the summer months, 20,000 railway ties were prepared, and 210,000 poods¹ of rails received.

On the Ussuri line telegraphic communication has been arranged for a distance of 377 versts—two wires for 141 versts and one wire for 236 versts. The construction of station buildings is now practically completed, and the roadbed is nearly finished. Furthermore, 22 locomotives and 368 cars and platforms have been brought to this line. Since

¹ 1 pood = 36 pounds.

November 2, 1893, the transportation of passenger and merchandise cars has been begun between the stations of Vladivostok and Nicholsk, distance of 101 versts.

Owing to the development of the existing Russian railways and to the construction of new lines, the demands for rails have greatly increased at all the rail-rolling mills of European Russia. Therefore the construction of new mills is very desirable, especially in Siberia. None of the mills now existing in that country are able to turn out the necessary quantity of rails for a certain period. Therefore, the proposition of the Bogoslovsk metallurgical district to build a rail-rolling mill has been accepted, with the sanction of the Uzar, by the committee of the Siberian Railway. From an economic point of view, the construction of the above-mentioned mill will in no wise be prejudicial to the development of the rail-rolling industry in Siberia, as the 5,000,000 poods of rail which the Bogoslovsk mill has contracted to manufacture will be insufficient to supply the demands of the Siberian Railway. The prices of rails fixed by the Bogoslovsk mill are moderate. During 1892, rails were ordered at the following prices per pood, without delivery: At the Poutilov works, 1.70 rubles; at the Demidov works, 1.58 rubles; at the South Dnieprovsk works, 1.66 rubles; and at the Novo-Rossisk works, 1.76 rubles. By comparing these figures with the prices fixed by the management of the Bogoslovsk district (1.58 rubles at the factory, and 1.76 rubles with delivery at Krivoschekovo) it will be seen that these prices are lower than at the other factories. Furthermore, the ministry of ways of communication had the management of the Bogoslovsk district make a deduction of 1 kopeck per pood on the prices fixed for the delivery of the rails to Krivoschekovo, which, on the whole, makes a rebate of 50,000 rubles. Independently of this, the management of the Bogoslovsk works has contracted to supply a certain quantity of rails besides those ordered to replace such as may become worn out during the first ten years.

One of the principal questions raised in 1893 by the committee of the Great Siberian Railway was the proposition to construct a temporary railway between Irkutsk and Listvinichnaya, a station on the western border of Lake Baikal, and to organize regular steam transportation on that lake, in order to join, by means of uninterrupted steam communication, the Middle Siberian with the Transbaikal Railway. The realization of this scheme is especially desirable, as the construction of the Circumbaikal line, belonging to the third portion of the work, will not be finished in the near future, and as the construction of the temporary line between Irkutsk and the Listvinichnaya, a distance of 80 versts, on an even surface, and the establishment of steam service on Lake Baikal will not involve great expense. On the other hand, the completion of this enterprise, especially after the construction of the railway line to Irkutsk, will be of great importance during the building of the Transbaikal line, as it will facilitate the transportation of the necessary

materials. Furthermore, it will form a convenient means of communication between the Middle Siberian and the Transbaikal lines. In winter, when the steamship communication will have to be suspended, passengers can be transported from one side of the lake to the other on sledges. Lake Baikal is from 35 to 40 versts across at that point, so that it would be very easy to lay down a narrow railroad on the ice. Owing to the above-mentioned reasons, the Czar has sanctioned the building of this temporary line, and it is now in process of construction.

The Middle Siberian Railway will be completed, according to the opinion of the minister of ways of communication, in 1898—two years earlier than was first anticipated. At the beginning it was thought that rails, all necessary materials, and workmen could be brought from European Russia to one point only—that is, to the port of Kri-voschekovo, on the Obi, and from there the laying down of the rails was to begin. Closer investigation has shown that the rails and materials can be transported also by the rivers Chulym and Angara, and therefore rails can be laid down at the same time at Achinsk, Krasnoyarsk, and Irkutsk. Besides, it was first supposed that workmen could be had only from European Russia, but it turns out that the local workmen from all parts of Siberia are seeking work in great numbers. Owing to all these facts, the construction of the whole of the above-named railway will be accomplished in 1898. The Achinsk-Krasnoyarsk section, 175 versts long, will be completed in 1895; and in 1896, instead of 1897, the construction of the line from Krasnoyarsk, and at the same time from Irkutsk, will be begun.

The construction of the Transbaikal Railway will be begun in 1895, before European Russia and Irkutsk are joined by rail. Therefore, supplies for the Transbaikal Railway are now under contract.

The construction of a cement factory in the Transbaikal will probably be decided upon and promptly undertaken, thus saving a heavy expense in transportation. In view of this the minister of ways of communication has ordered an investigation of the soil of the Transbaikal region. For this investigation the committee of the Siberian Railway proposes to give 8,000 rubles out of the sums appropriated for auxiliary enterprises.

On the first section of the Western Siberian Railway, from Cheliabinsk to Kurgan, a distance of 240 versts, trains began to run on December 3, 1893, transporting also cargoes belonging to private persons, but only in the direction from Kurgan to Cheliabinsk, as all the trains from this point to the east are loaded exclusively with railroad supplies necessary for the further construction of the Western Siberian Railway. According to information given by the minister of ways of communication, 1,000 rubles are daily earned from the operation of the section from Cheliabinsk to Kurgan, and 600 rubles from the temporary movement of merchandise and passenger trains, opened on November 2, 1893, on the Ussuri line between the stations Vladivostok and Nicho-

laevsk, a distance of 101 versts. On the station of Nevelskaya, situated at verst 146, and the station of Chernigovka, situated at verst 184 of the Ussuri line, the movement of trains for transporting materials and private cargoes began on January 20, 1894. Thus, on the Ussuri line trains are running now over a distance of 184 versts. Since January 1, 1894, 137,550 poods of private goods have been carried by this line, from the transportation of which 30,994 rubles have been earned.

Herewith is appended a map showing the line of the Great Siberian Railway as in process of construction. This map is taken from Volume V of *The Industries of Russia*, recently issued in Russian by the Russian Government and translated into English and edited by the undersigned. The reader interested in the local, commercial, and strategical features of this great railway would do well to consult the above-mentioned work.¹

J. M. CRAWFORD,
Consul-General.

ST. PETERSBURG, *May 4, 1894.*

RECENT PROGRESS ON THE LINE.

So far, 1,400 versts (928 miles) of rails have been laid on the Siberian Railroad, but it is expected that 2,500 versts (1,658 miles) will be laid by next winter. It is calculated that in 1898 the road will be fully completed to Irkutsk. The building of the Siberian Railway through the Irkutsk-Chavarovsk district, a distance of about 3,500 versts (2,321 miles), according to a report, will be very difficult, and new plans for the construction of that extension will be prepared.

A few days ago the ministry of ways of communication allowed from the contingent fund the sum of 2,500,000 rubles to the Tiflis government for the construction of the Kars Railway.

JOHN KAREL,
Consul-General.

ST. PETERSBURG, *May 29, 1895.*

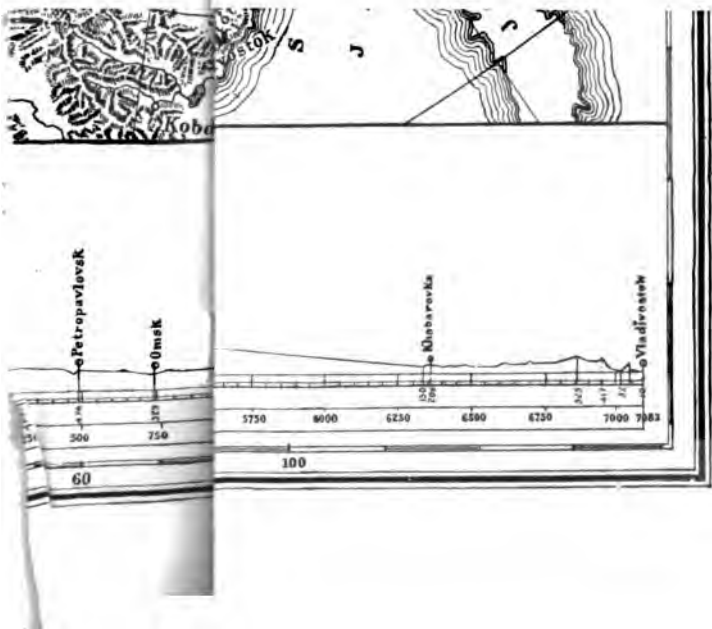
FINLAND.

RAILWAYS.

The railways of Finland are the property of the State and are managed by directors appointed by the Government. Trains from the different terminal stations run as follows:

From Helsingfors to St. Petersburg, via Viborg, twice a day, morning and evening. The distance is 441 kilometers (274 miles), and the

¹Volume V, *Industries of Russia*, was published by the Russian Government in a separate volume in English entitled *Siberia and the Great Siberian Railway*, with a preface by Consul-General Crawford, for the World's Columbian Exposition at Chicago.



time about fourteen hours. Fares, first class, 37 Finnish marks, or about \$7.14¹ United States currency; second class, 24 marks (\$4.80). The distance from Helsingfors to Viborg is 312 kilometers (193.9 miles). Fares, first class, 27.50 marks (\$5.50); second class, 17.50 marks (\$3.50).

From Viborg to Imatra Waterfall, a distance of 72 kilometers (44.74 miles), trains run every day. This waterfall is the largest in Europe. There are good hotels there. Fares, first class, 7.20 marks (\$1.44); second class, 4.70 marks (94 cents).

From Helsingfors to Abo, a distance of 275 kilometers (170.9 miles), trains run once a day. Fares, first class, 24.50 marks (\$4.90); second class, 16 marks (\$3.20).

From Helsingfors to Hango, a distance of 207 kilometers (128.6 miles), trains run once a day. Fares, first class, 19 marks (\$3.80); second class, 12.50 marks (\$2.50).

From Helsingfors to Uleaborg, distance 752 kilometers (467.2 miles), stopping at Tavastehus, Tammerfors, Wasa, Jakobstad, and Gamla Karleby, trains run once a day. Fares, first class, 53 marks (\$10.60); second class, 34.60 marks (\$6.92).

From Helsingfors to Kuopio, distance 465 kilometers (287.9 miles), stopping at St. Michel, trains run once a day. Fares, first class, 37.90 marks (\$7.58); second class, 24.60 marks (\$4.92).

From Viborg to Sordavala, distance 179 kilometers (111.2 miles), trains run once a day. Fares, first class, 16.70 marks (\$3.34); second class, 10.90 marks (\$2.18).

These railways are all single track, and in very good repair. The trains all carry mails.

¹ The vice-consul estimates the Finnish mark at 20 cents.

OCEAN LINES.

Finland steamers run regularly once a week between Hull (England) and Helsingfors, leaving each port every Saturday evening, and touching at Copenhagen. The voyage occupies about four days. These steamers carry cargo and passengers. The rates for first-class passengers are 125 marks (\$25), and living per day 7 marks (\$1.40). Freight for heavy goods, 12s. 6d. (\$3.03) per net registered ton, and for measurement goods, 5d. (10 cents) per cubic foot. The steamers are about 650 tons register and of 1,600 indicated horsepower.

First-class passenger and freight steamers are run regularly between Stockholm, Abo, Hango, Helsingfors, Viborg, and St. Petersburg, leaving the terminal ports (Stockholm and St. Petersburg) about three or four times a week. The first-class fares between Helsingfors and Stockholm are 45 marks (\$9), and between Helsingfors and St. Petersburg 22 marks (\$4.40). Freight rates are moderate. These boats carry mails and are about 400 net registered tonnage, their average speed being 12 knots an hour. This line can be recommended to tourists for cleanliness, attendance, and good table at cheap rates.

Passenger and freight steamers run direct between Lubeck and Helsingfors and Stettin and Helsingfors, touching at Reval. The first-class fares are 60 marks (\$12), with 25 per cent discount for return tickets. Freight rates are moderate. The steamers are of about the same size and speed as those running between Helsingfors, Stockholm, and St. Petersburg.

COASTWISE LINES.

Passenger steamers, at moderate rates, run from Helsingfors along the Finnish coast as far north as Uleaborg, touching at every principal port on the way. There is also a very beautiful and interesting tourist route for passenger steamers along the Saima Canal, beginning at Viborg and ending at Kuopio, connecting the numerous lakes in that district. There are, besides, small passenger steamers plying on the lakes in other districts. There is also regular communication once a month between Finland and several of the Mediterranean and French ports.

All these steamers belong to share companies, and are managed by their respective directors.

HERMAN DONNER,
Vice and Acting Consul.

HELSINGFORS, June 25, 1894.

NORWAY.

Christiania, the capital and the most populous city of Norway, where this consulate is located, is the center of the commerce as well as of the principal lines of traffic. From here, communication with many foreign countries, and numerous places on the coast line of the country itself, is regularly kept up with comfortable steamships, which are seldom impeded by ice. Christiania is the center of the railway lines, which radiate in different directions and connect this seat of the administration and of the higher education of the country with the inland districts and the sister Kingdom of Sweden.

OCEAN LINES.

(1) *Christiania-America*.—At present no direct line under the Norwegian flag connecting this country with American ports exists. A regular line between the port of Bergen and New York, which was started about fifteen years ago, chiefly for carrying emigrants, was discontinued when the emigration fell off, but the vessels of the Danish Thingvalla Line, which ply fortnightly between Copenhagen and New York, have, during the last decade, regularly called at Christiania and at Christiansand, and have, besides transporting the bulk of the Norwegian emigrants, proved of great advantage to the Norwegian trade with the United States. As these steamers, whose average passage is fifteen days, belong to a company in Copenhagen, I presume that the consul at that port has reported on their number, force, etc. The rates for passengers from this port to New York are 225 kroner (\$54.30), and for freight from 16 to 20 shillings (\$3.89 to \$4.866) per ton.

(2) *Christiania-Hull*.—Wilson Line (British); weekly sailings to Hull, via Christiansand, in about forty-eight hours; distance from this port to Christiansand, fifteen hours; fare to Hull, £4 (\$19.47); food not included.

(3) *Christiania-London*.—Wilson Line (British); weekly via Christiansand, in about seventy-two hours; fare, £4 (\$19.47).

(4) *Christiania-Newcastle upon Tyne*.—Lloyd's steamers (2), of about 700 tons, belonging to a Norwegian company; weekly sailings, and calling at Laurvig and Arendal in Norway; passage, sixty hours; fare, 45 kroner (\$12.06).

(5) *Christiania-Grangemouth*.—A Norwegian line of two steamers of about 1,000 tons; make the run in sixty hours, calling at Tonsberg, Arendal, Christiansand, and Egersund; fare, £2 10s. (\$12.17).

(6) *Christiania-Hamburg*.—Søndenfjeldske Norwegian Steamship Company; weekly sailings; four steamers, calling at Arendal and Christiansand; average passage, fifty hours; fare, without food, 30 kroner (\$8.04).

(7) *Christiania-Bremen*.—Søndenfjeldske Norwegian Steamship Company; weekly sailings, chiefly for freight; fare, without food, 30 kroner (§8.04).

(8) *Christiania-Havre*.—Søndenfjeldske Norwegian Steamship Company; fortnightly sailings; average passage, seventy-two hours; fare, without food, 80 kroner (§21.44).

(9) *Christiania-Antwerp*.—Ostlandske Lloyds (Norwegian company); two steamers; weekly sailings, calling at Arendal and Christiansand; average passage, fifty hours; fare, without food, 45 kroner (§12.06).

(10) *Christiania-Copenhagen*.—The United Danish Steamship Company run, during the summer months, a semiweekly line of two large steamers, chiefly for passengers; passage, twenty-four hours; calling at Gothenburg; rate of passage, 28 kroner (§7.50). A steamer belonging to this company runs weekly between Christiania and Copenhagen, via Fredrikshavn, Jutland.

(11) *Christiansand-Frederikshavn*.—A triweekly regular line (Norwegian), with one steamer, subventioned by the Norwegian Government for carrying mails to the Danish Jutland; passage, ten hours, corresponding with the railway trains between Hamburg and Fredrikshavn; fare, 15 kroner (§4.02).

(12) *Christiania-Stockholm*.—Södra Sverige Line (Swedish), with two steamers; weekly sailings, calling at Gothenburg, Helsingborg, Landskrona, Malmo, Ystad, Carlshamn, Ronneby, Carlskrona, and Kalmar; passage, about four days; fare, without food, 40 kroner (§10.72).

(13) *Christiania-Gothenburg*.—Three coast liners (Swedish), plying between the two ports four times a week, in about sixteen hours, during the open season; distance, 150 miles; fare, 16 kroner (§4.28).

(14) *Christiania-Bergen, Drontheim, etc.*—The Bergenski and the Nordentjelski Steamship companies, with twenty-two and nineteen steamers, respectively, keep up a regular, almost daily, communication during the whole year along the southern and western coast of Norway, carrying mail, passengers, and goods between the smaller ports; distance, Christiania to Bergen, 400 miles; average passage, sixty hours; fare, 36.80 kroner (§9.85), without food.

Other local lines, with excellent and quick steamers, keep up constant communication between the two principal ports of Norway—Christiania and Bergen—calling at Laurvig, Kraziro, Arendal, Christiansand, and Stavanger, besides other smaller ports.

LAKES AND CANALS.

Norway has no navigable rivers, but has a great number of lakes navigated by comfortable steamers. Of the lakes may be mentioned the Miosen Lake, the Randsfjord, and Nordsjo, in the district of Tellemarken, where a system of canals and locks lately finished connect the lakes of the inland districts with the sea. These canals, which have cost about \$1,000,000, are controlled by the Government, while the

Steens Canal, which connects the sea near Fredrikshald and the Swedish frontier with the lake of Glieren, is under the control of a company of shareholders.

RAILWAYS.

Norway can boast of only 1,600 kilometers (994 miles) of railways, all single track, and most of them narrow gauge. New lines are, however, being built, and the legislature has lately authorized the construction of some important and long discussed lines across the mountains, to connect the western with the eastern districts of the country, at an expense of about \$10,000,000.

The Norwegian railways are controlled by the Government, with the exception of the so-called Norwegian Trunk Railway, between Christiania and the lake of Miosen, a distance of about 50 miles. This railway, the first one in this country, was built about forty years ago, by English engineers, and partly with British capital, and has since been controlled by a combined board of directors representing the Norwegian and the British shareholders. The other principal railway lines within this consular districts are the following:

Christiania to Trondhjem, 562 kilometers (349 miles); principal stations, Hamar and Roros. The fast trains run the distance in about seventeen hours.

Christiania to Frederikshald and the Swedish frontier, about 160 kilometers (99.8 miles); running time about four hours, stopping at Moss, Frederiksstadt, and Frederikshald.

Christiania to Skien, via Drammen and Laurvig, 204 kilometers (127 miles); running time, six and one-half hours.

Christiania to Kongsvinger (Swedish frontier), about 130 kilometers (81 miles); running time, about five hours.

Drammen to Randsfjord, 142 kilometers (88 miles); running time, three and one-half hours.

HIGHWAYS.

The Norwegian highways may justly be considered among the best in Europe, and they attract much admiration from foreign tourists. Their aggregate length is about 10,000 kilometers (6,214 miles). The principal lines are laid through the picturesque valleys of Valvers, Hallingdal, Gudbrandsdal, and Telemarken, and connect the eastern with the western sections of the country. They are constructed and supervised by the Government, which has had for the past fiscal year an appropriation from the legislature of about \$570,000. They are, as a rule, kept in repair by the farmers in the rural districts, on whom this duty is laid as a public burden. For the convenience of travelers, a perfect system of station houses has been established on all the highways, and horses and conveyances are kept ready at a moderate tariff, fixed by the Government.

GERHARD GADE,

CHRISTIANIA, *March, 1895.*

Consul.

SWEDEN.

Sweden, both by land and sea, is provided with excellent means of communication.

HIGHWAYS.

The highways altogether are 37,000 miles in length, have nearly a minimum width of 20 feet, and are generally macadamized.

RAILROADS.

The railroads are the chief means of communication, although they were opened somewhat late—the first in the year 1855. Sweden, per capita, owns more railway than any other country in Europe, while in respect to its area the southernmost portion of the country is about as well supplied with railways as France. The entire length of Swedish railroads is close upon 5,500 miles, rather more than a third part belonging to the State. The entire rolling stock at the end of 1891 was composed of 896 locomotives, 1,928 passenger cars, and 21,651 mail, baggage, and freight cars. During the same year 13,640,000 passengers were carried an average distance of 19 miles each; of freight, 11,230,000 tons were moved an average distance of 34 miles per ton. In other words, about 400,000,000 passengers were carried 1 mile and about 600,000,000 tons of freight were moved the same distance.

The Swedish railroads have been surveyed and built in a thoroughly substantial yet economical manner. The State roads have a standard gauge of 4 feet 8½ inches. The gradients are generally easy, and the smallest curves have a radius of about 1,000 feet. The sleepers are of pine, cut in winter, of best quality, and not impregnated. The rails used by the State roads are manufactured in Sweden of bessemer or open-hearth steel, and weigh 22.8 pounds per foot. The rail joints are all suspended and strengthened by fish plates of angular section, the rail ends being secured by bolts. The rails are attached to the sleepers by spikes. The drainage is provided for by means of open side ditches in the cuts. All lines have single track. All over Sweden rivers are encountered which have to be bridged for the railroads, especially so in the north. Among the longest are the Dal River bridge, which contains five spans, and is built on high latticed iron pillars, and the Ljusne River bridge, which has three spans and is built of continuous lattice girders. The bridge across the Angerman River is the longest and highest of all, measuring about 1,200 feet between abutments; it is built on the cantilever system upon steel trestles in five spans. The tunnels are not numerous and are all short. The longest passes through the hill upon which a portion of the capital is situated. All railroad lines are protected by fences. The passenger cars, as a rule, are built on the intercommunication system and are provided with closets and lavatories.

The State railroads have three classes of passenger cars. The first class are limited to express trains, and are generally but little patronized. The night expresses carry sleeping cars of first and second classes, where a berth may be obtained for the additional sum of \$1.35 and 80 cents, respectively, for the night. The trains are sufficiently frequent to meet the demand.

The passenger rates for long or short distances per mile are as follows: First class, about 2.30 cents; second class, about 1.65 cents; third class, about 1.10 cents.

The total income from freight during 1892 was about 240,000,000 kroner, or \$64,300,000, for 42,674,327 tons.

The State roads are managed and controlled by the royal board of railways. The accommodations and conveniences are good, and the roadbed and rolling stock are kept in the best condition.

The only railway in the world which enters the Polar Circle is the State line from Lulea to Gellivara. This line is much used by tourists on their way to Mount Dundred, from which a fine sight of the midnight sun may be had.

WATER COMMUNICATION.

Communication by water plays an important part in this country. Along the entire coast (1,600 miles) a lively traffic is kept up, as also on the great lakes, rivers, and numerous canals. The Gota and Dalsland Canal, in southern Sweden, and the Stromsholm Canal, in central Sweden, are favorite routes for tourists, and have splendid accommodations.

A Swedish passenger steamer, especially if she hail from Stockholm, is a model of cleanliness, neatness, good taste, and almost luxury.

The Swedish merchant service at the close of 1891 numbered 2,979 sailing vessels of 377,667 tons and 1,181 steamers of 152,493 tons.

THOS. B. O'NEIL,
Consul.

STOCKHOLM, *June 5, 1894.*

AFRICA.

MEDITERRANEAN COAST.

MOROCCO.

Morocco contains no through lines of traffic of any kind whatever. There are no highways in the country, communication between the various towns, villages, etc., being carried on by means of mules, camels, and horses.

J. JUDSON BARCLAY,
Consul-General.

TANGIER, *May 15, 1894.*

ROUTE FROM THE UNITED STATES—INTERIOR COMMUNICATION.¹

The shortest route for shipping goods from the United States to the coast of Morocco is from New York, via Gibraltar, per Anchor Line, German Lloyds, and the Italian line of steamboats; the next best is from the United States via London and Hamburg. Goods meet with the usual care on board the steamships, and are landed at the ports of Morocco by lighters, there being no wharves. Suitable warehouses are provided..

Goods are sent into the interior by camels, mules, and donkeys. A camel's load consists of 5 hundredweight (560 pounds), in two packages; a mule's of 3 hundredweight (336 pounds), in two packages, and a donkey's of 1½ hundredweight (168 pounds), in two packages. Dimensions of packages are immaterial. The usage to which the goods is subjected en route is not so rough as might be expected under existing circumstances. There is no rain in summer to damage goods sent in this season.

OCEAN LINES.²

The shipping return shows a large increase in the tonnage visiting the ports of Morocco. The total entrances [1891] were 2,658 vessels,

¹ Extract from report of Consul-General Mathews, printed in *Consular Reports*, January, 1894, p. 212.

² Reprinted from *Consular Reports* No. 140, May, 1892.

with a tonnage of 936,865, and clearances, 2,488 vessels, with 921,374 tons, being an increase of 333 vessels and 159,773 tons over the figures of 1890. This is owing to a number of Spanish vessels which came to Tangier to perform the quarantine to which vessels from various ports of Spain were subjected during the greater part of last summer, and to the continued visits of the German steamers.

France leads the list in point of tonnage. The steamers visiting these ports are of fair size, and consist of Paquet & Co.'s Line, which leaves Marseilles twice a month, visiting Tangier and all the ports of Morocco, and back; the Compagnie Générale Transatlantique, one of whose steamers leaves Oran (Algeria) every Friday, calling at Nemours, Malaga, Gibraltar, and Tangier, leaving this port on Tuesday and returning to Oran after touching for a few hours at the aforesaid ports. Besides these, four other steamers brought Moorish laborers from Oran, and one pilgrims from Jeddah.

British shipping consists of the Forwood steamers (Mersey Steamship Company), which leave London twice a month, calling at all the ports of Morocco, Gibraltar, and return. Pilgrim steamers every year take pilgrims from Tangier to Jeddah and back, and small steamers trade between this port and Gibraltar almost every alternate day.

Spain leads in the number of small vessels. The steamers of the Transatlantic Company sail once a month from Barcelona to Cadiz, Tangier, and the western ports of Morocco; also steamers every Monday, Wednesday, and Friday from Cadiz to Tangier, returning on the alternate days. The Thomas Haynes's Sons' steamers ply irregularly between the European ports of Cadiz, Gibraltar, and Malaga and Tangier and the western ports of Morocco.

German shipping shows a considerable increase. The itinerary of their lines is as follows: The Atlas Line, of Hamburg, to Lisbon, Tangier, and western ports of Morocco as far as Mogador, and back to Hamburg the same way; the Sloman Line, plying between Hamburg and the Mediterranean ports of Barcelona, Genoa, etc., and calling at Tangier on their way out; the Waermann boats, from Hamburg on the 15th of each month for Tangier, western ports of Morocco, the Canaries, Senegal, Sierra Leone, Gold Coast, Kongo, and the German possessions, and returning by approximately the same route to Hamburg.

F. A. MATHEWS,
Consul-General.

TANGIER, *November 28, 1891.*

NAVIGATION RETURNS—NATIONALITY OF SHIPPING.¹

The general return of shipping at Tangier for the year 1893 shows a total entry of 1,055 vessels, with an aggregate tonnage of 292,355, which is 120 entries and 36,202 tons in excess of the figures for the preceding

¹ Extracts from annual report of the British Consul at Tangier, September 25, 1894.

year. Of this number, 268 vessels were small sailing ships, almost all of them under the Spanish flag, and the remaining 787 were steamers, representing an aggregate tonnage of 285,415. Thus, in the year 1893 there were 21 sailing vessels with 627 tons, and 99 steamers with 35,575 tons, more than 1892.

Of the steamers, the largest number, viz, 372, with 142,615 tons, were Spanish, while 303, with 63,585 tons, were British; 78, with 48,857 tons, were French, and 27, with 23,803 tons, were German.

British shipping shows a decrease of 18 vessels, with 5,307 tons, since the preceding year. The decrease is principally observable in the entries of the smaller steamers engaged in the local traffic between Gibraltar and Tangier, which show 11 entries less than in 1892, being credited altogether with 263 entries, representing 21,247 tons. The Mersey Steamship Company (Forwood Brothers & Co.) trading between London and the Moorish ports, made 18 entries, with 14,975 tons, or 5 entries less than the preceding year. The other entries were 4 steamers of the Hall Line, calling to embark cattle for Lisbon, 12 Hadj steamers to convey pilgrims to Jeddah, 3 tourists' vessels, and 3 other steamers.

Of the 372 steamers that entered under the Spanish flag during the year, 300 vessels, with an aggregate of 117,128 tons, were of the Spanish Compañía Transatlantica, subsidized by the Spanish Government to carry the mails, which run three times a week from Cadiz to Gibraltar and back, touching at Tangier and Algeciras each way, thus making 6 entries a week at this port. The steamers of the firm Sons of Thomas Haynes, of Cadiz, are credited with 57 entries and 16,897 tons. They trade between Cadiz, Gibraltar, and the western ports of Morocco. There were also entries of 11 Spanish steamers calling for oxen for Lisbon, with 3 other steamers these make up the total of Spanish shipping.

The decrease noticed in 1892 in French shipping is still greater in the year 1893, the number of entries having fallen to 78 and the aggregate tonnage to 48,857. The decrease is most marked in the case of the steamers of the Compagnie Transatlantique, which are only credited with 20 entries and 17,489 tons, as against 32 entries in 1892 and 75 in 1891, the cause being that they now only run fortnightly from Algeria to Tangier, and do not go on to Cadiz.

The steamers of the Compagnie Paquet, of Marseilles, trading between that port and the Canary Islands, touching at Tangier and the western Moorish ports en route, made 44 entries in 1893, as against 48 in the preceding year. The remaining entries were chiefly of steamers bringing Moorish laborers back from Algeria, and also 1 Hadj steamer, and a vessel taking cattle to Lisbon.

Fewer German steamers entered this port in 1893 than in the preceding year, their number and tonnage being 27 and 23,803, respectively, whereas in 1892 there were 35 vessels, with an aggregate of 27,329

tons. Of the 27 steamers, 13 were of the Woermann Line, of Hamburg, which call at the Moorish ports en route to the west coast of Africa, 4 of the Sloman Line, which run to Mediterranean ports, and 9 of the Atlas Line, which also start from Hamburg and call at Antwerp, Lisbon, and the Moorish ports.

Of the 7 Dutch steamers that visited this port during the year, 5 were of the Royal Netherlands Steamship Company, on their way to the Dutch Indies, and the other 2 were English steamers temporarily sailing under the Dutch flag, which called to embark pilgrims for the holy places of the Hedjaz.

POSTAL SERVICE.¹

The year 1892 was, for Fez, the most eventful period since the present Sultan's accession.

In February a British postal agency having biweekly courier service to Tangier was opened, thus for the first time placing Fez in direct and regular communication with abroad and with the Moorish ports.

In the end of July a French firm instituted a biweekly postal courier service to Tangier, Elksar, and Laraiche, in cooperation with the French post-office in Tangier. In the beginning of 1893 this service was taken over by the French Government, and at the same time the Moorish Government established a post of their own, taking letters to other Moorish towns, but not for abroad, so that, whereas in January, 1892, there was no official mail service, now six couriers per week leave for Tangier alone under the control of the Moorish, British, or French Governments.

The Moorish post-office uses no adhesive nor date stamps, but an inked seal bearing the name of the Sultan and the current Mohammedan year.

With regard to the general post and telegraph service,² it may be desirable, owing to discrepancies which I have observed in some generally reliable European sources of information, to repeat the intimation that neither telegraphic communication nor parcels-post facilities at present extend beyond Tangier, with the exception, as regards the latter, that parcels may be sent via Hamburg for the German steamers which come here from that port, and are delivered, not through the post-office, but from the steamer agency.

¹ Extracts from report of British consul at Tangier, September 9, 1893.

² Extract from report of British consul at Mogador, March 28, 1893.

ALGERIA.

OCEAN LINES.

In a dispatch to the Department dated May 8, 1894, and printed in Special Consular Reports, "Extension of Markets for American Flour," page 488, Consul Grellet, of Algiers, says:

Shipping facilities with the United States are not good, owing to the lack of direct communication. Except the steamers of the Hamburg Packet Company and North German Lloyds, which call at Algiers twice a month from November to May, no regular steamship lines ply between the American and Algerian ports. Goods to or from the United States are generally shipped in transit via Marseilles, Havre, Liverpool, London, Antwerp, or Hamburg.

RAILWAYS.¹

The Algerian railroads are, as a rule, established upon the same financial basis as those of the metropolis, i. e., the interest on the capital invested is guaranteed by the Government, as well as the amount necessary for the working expenses of the respective lines. All advances made by the Government bear interest at the rate of 4½ per cent, to be accounted for by the companies at the date of refunding. There is but one exception to this arrangement, viz, the line from Arzew to Kral-falap, controlled by the Franco-Algérienne Company. No guarantee has been given by the Government, but in lieu thereof a concession of 100,000 hectares of alfa lands have been granted to the company for a period of ninety-nine years.

In the year 1879 the general plans for the construction of the railroads of Algeria were drawn up, and these plans having been rigidly adhered to, the various lines are rapidly approaching completion. The plans referred to are based upon a double consideration: first, the commercial interests of the country; and second, the defense of the territory against enemies, either foreign or domestic.

On the 31st of December, 1888, the total length of completed railroads in Algeria had attained to 2,709 kilometers,² and which can be divided into two great sections:

(1) That section which includes the lines running parallel to the seashore, and extending from the frontier of Morocco to the boundary of Tunis, connects, by the aid of the various lines of the second section, all the seaports of Algeria. In the event of any attempt at invasion the system by which the country is intersected and connected by these lines would do much to facilitate the rapid transportation of the Algerian forces from any point in the interior to the coast.

¹ Reprinted from United States Consular Reports for April, 1889, No. 104.

² 1 kilometer = 0.621376 mile.

(2) This section includes all the lines running from the seacoast to the interior, and may be more properly termed "lines of penetration." In the case of insurrection these lines would be of very great importance and utility in moving troops with dispatch. From a commercial point of view, the whole of these lines are of vital importance, and will assuredly contribute much to the rapid development of the colony. Prior to the building of these lines the means of transportation were of the most primitive description, whereas now the facilities afforded and low rates granted permit of the products of the interior being carried to the seaboard, where ready markets are always to be found.

The following data will furnish some idea as to the position of the Algerian railroads at the end of the year 1888:

From—	To—	Distance.	From—	To—	Distance.
		<i>Kilo-</i>			<i>Kilo-</i>
		<i>meters.</i>			<i>meters.</i>
First section:			Second section—C'd.		
La Senia.....	Ain Temouchent.....	80	Mostaganem.....	Thiaret.....	202
Oran.....	Algiers.....	426	Bougie.....	Beni Mansour.....	88
Maison Carree.....	Constantine.....	452	Menerville.....	Tizi Ouzou.....	53
Kroubs.....	Duvivier.....	148	Philippeville.....	Constantine.....	87
Duvivier.....	Sidi el Henessi.....	105	El Guerara.....	Biskra.....	201
Second section:			Bone.....	Duvivier.....	55
St. Barbedu Kelat.....	Rae el Ma.....	151	Soukaras.....	Tebessa.....	128
Talia.....	La Moriciere.....	34	Bone.....	Am Mokra.....	33
Arzew.....	Ain Sefra.....	454			
Ain Thizi.....	Mascara.....	12	Total.....		a 2,709

a 1,683 miles.

All these lines are under the control of six companies, viz: The Paris-Lyon-Mediterranee Company, the East Algerian Company, the Bone-Guelma Company, the Ouest Algerian Company, the Franco-Algerian Company, and the Moktabel Hadid Company.

(1) The Paris-Lyon-Méditerranée Company (gauge, 1.44 meters) runs the line from Oran to Algiers (426 kilometers), and from Philippeville to Constantine (87 kilometers); total, 513 kilometers. This line was conceded in the year 1863, and interest at the rate of 5 per cent was guaranteed by the Government on a total capital of \$15,440,000, which amounts to \$772,000. The working expenses, also annually guaranteed, amount to \$974,650. These lines are now self-supporting and are reimbursing the advances made by the Government.

The line from Algiers to Oran crosses a generally flat country, hilly only between Bon Medfa and Affreville. It intersects the plains of Metidja and Chetiff. The first-named plain is one of the richest tracts of land in Algeria, producing crops of all kinds, including cereals, oranges, grapes, wines, etc. The plain of Chetiff is also fertile, the principal production being cereals.

The Philippeville to Constantine line intersects a very uneven and undulating section of country, and has for a considerable length of time been the only available outlet from the interior for merchandise going seaward from the department of Constantine.

(2) The East Algerian Company controls the lines from Maison Carree to Constantine, 452 kilometers; El Guerara to Biskra, 201 kilometers:

Menorville to Tizi-Ouzou, 51 kilometers; Bougie to Beni Mansour, 88 kilometers; total, 792 kilometers.

These four lines were conceded at different dates between the years 1880 and 1884, while those to Biskra, Tizi Ouzou, and Beni Mansour were only completed during the year 1888. The guaranteed rate of interest is 5 per cent on a capital of \$36,028,906, and amounts to \$1,801,445.30. The amount incurred by working expenses is \$1,093,336.

Algiers to Constantine, Menorville to Tizi Ouzou, and Bougie to Beni Mansour: The country traversed by these lines is very mountainous, but nevertheless very fertile, the principal productions being cereals, olives, olive oil, cork, and figs. Vine culture is also rapidly increasing.

El Guerara to Batna: The natural formation of the country through which this line passes is hilly, and the railway has been specially constructed to meet military requirements, and also with the view of connecting the splendid oasis of Biskra with the seashore. This oasis is very suitably situated for cultivating dates, and the area of land fitted for this purpose is being constantly augmented, principally through the beneficial effects of boring wells on the artesian system. Even now an extensive and lucrative commerce in dates is carried on.

(3) The Bone-Guelma Company control the following lines: Bone to Kroubs (gauge, 1.44 meters), 203 kilometers; Duvivier to Sidi el Henessi (gauge, 1.44 meters), 105 kilometers; Soukaras to Tebessa (gauge, 1 meter), 129 kilometers; total, 437 kilometers. These lines were conceded between the years 1876 and 1885. The branch line from Soukaras to Tebessa was only completed in 1888.

The rate of interest for the lines is as follows: Bone to Kroubs and Duvivier to Soukaras, 6 per cent; capital, \$10,865,150; interest accruing, \$651,909. Soukaras to Sidi el Henessi and Soukaras to Tebessa, 5 per cent; capital, \$8,192,850; interest accruing, \$409,642.50. The amount of working expenses, \$614,022.75, and which are guaranteed.

All the lines controlled by this company run through a rich but very uneven country, the productions of which comprise cereals, cork, wine, alfa, etc. The junction with the Tunisian Railway system is at El Henessi.

(4) The West Algerian Company controls the following lines: Kelat to Ras el Ma, 151 kilometers; La Senia to Ain Temouchent, 80 kilometers; Talia to La Moriciere, 34 kilometers; total, 265 kilometers. These lines were conceded between the years 1874 and 1885.

The rate of interest for these lines: Kelat to Sidi bel Abbes and Taëia to Tlemcen, 5 per cent; capital, \$5,131,190; interest accruing, \$160,716; Sidi bel Abbes to Ras el Ma and La Senia to Ain Temouchent, 4.85 per cent; capital, \$5,268,900; interest accruing, \$255,541.65. The working expenses amount to \$413,611.85.

These lines run, in some parts, through an exceptionally fertile country, producing principally cereals and wine, while in other parts it crosses very extensive alfa lands. For the year 1887 the amount of alfa produced in this region alone was 60,882 tons.

(5) The Franco-Algerian Company (gauge, 1.055 meters) controls the following lines: Arzew to Kralfalah, 214 kilometers; Kralfalah to Ain Sefra, 240 kilometers; Ain Thizi to Mascara, 12 kilometers; Mostaganem to Thiaret, 202 kilometers; total, 668 kilometers.

In the case of the line from Arzew to Kralfalah, no Government guaranty has been given, but in lieu thereof a land grant has been ceded amounting to 100,000 hectares for a period of ninety-nine years. This land should provide very favorable returns to the company, in the shape of alfa, which grows abundantly in this part of the country, including Mecheria, Saida, Mar, and El Aricha. The production of alfa from these districts for the year 1887 was 108,500 tons. That portion of the railway north of Perregaux runs through a tract of country producing, for the greater part, cereals.

(6) The Mokta to El Hadid line is 33 kilometers in length, and is the private property of the mining company of the same name. No guaranty of any kind given by the Government, the line having been specially constructed for the transportation of the iron ore from the mines to Bone. This line was only opened for passenger traffic on January 1, 1885. The Paris-Lyon-Méditerranée line is, up to the present, the only self-supporting system, and has commenced refunding the Government advances.

It is estimated that the other lines are not likely to be fully developed, from a commercial point of view, for at least ten years. During that period the different companies will be under the necessity of applying to the Government to make good the differences which may exist between the amount of their earnings and the amount required to meet working expenses and payment of interest on invested capital. After that lapse of time, and judging from the rapid increase of traffic, the probabilities are that the earnings will enable the companies not only to cover their working expenses but also begin the redemption of their debt to the Government.

To complete the Algerian railroad system the lines Oued Rhamour to Ain Beida and Blidah to Berroughia (gauge, 1 meter and 1.055 meters, respectively) are now under construction, and the following lines included in the general plan are being surveyed: (1) From Tlemcen to the boundary of Morocco; (2) from a point to be determined between Tlemcen and La Senia to the mining region of Rio Salado; (3) from Teney to Orleansville; (4) Affreville to Berroughia-Tremble and Bosdj Bouira.

Table A shows the exact terms of the Government. Table B shows the earnings for the years 1886 and 1887. It is to be particularly noted that the fall in the earnings for 1886 and 1887 was entirely due to the locust plague, which occurred in 1887, and when the statistics of 1888 are published the same fact will in all likelihood be repeated, cause and effect being due to said plague.

CHAS. E. GRELLET,

ALGIERS, *March 21, 1889.*

Consul.

TABLE A.—*Algerian railroads.*

Name of company and termini.	Length of line.	Date of concession.	Maximum capital guar. anteed.	Rate of guar. anteed.	Minimum working expenses guaranteed per kilometer.	Amount of working expenses yearly guar. anteed.	Amount of interest yearly guar. anteed.	Total.
Paris-Lyon-Méditerranée:	Kilometers.	June 11, 1863	\$15,440,000	Per ct.		\$772,000.00	\$1,746,650.00	
Algers to Oran.....	424.850	do		5				
Philippeville to Constantine.....	87.850	do		5				
Est Algérienne:								
Algers to Constantine.....	463.250	Aug. 2, 1880	20,287,123	5	\$1,440.00	666,978.10	1,013,356.15	1,680,334.25
El Gueraa to Batna.....	86.250	do	2,269,680	5	1,351.00	108,080.00	113,494.00	221,564.00
Batna to Biskra.....	121.250	July 21, 1884	5,585,056	5	965.00	116,765.00	279,752.80	396,517.80
Minerville to Tizi Ouzou.....	51.362	Aug. 23, 1883	3,265,047	5	1,440.00	173,995.20	163,252.35	237,187.55
Bougie to Bent Moussour.....	88.610	May 21, 1884	b 4,682,000	5	1,440.00	127,578.80	231,600.00	359,178.80
Ouled Ramoun to Ain Beida c	91.610	Aug. 7, 1885	1,975,355	5	965.00	87,815.00	98,767.75	186,582.75
Bone to Guelma:								
Bone to Guelma.....	88.042	Mar. 8, 1876	2,316,000	6	1,351.00	118,944.75	138,960.00	257,904.75
Guelma to Kroubs.....	114.712	Mar. 8, 1876	4,468,130	6	1,486.00	185,133.70	d 287,967.80	453,101.50
Duvivrier to Soukharas.....	51.911	Mar. 8, 1876	4,083,020	6	1,486.00	90,547.55	e 244,981.20	335,528.75
Soukharas to Sidi el Hennessi	52.773	Apr. 20, 1882	4,825,000	5	1,486.00	94,911.75	f 241,250.00	336,161.75
Soukharas to Tebessa.....	129.773	July 26, 1885	g 3,367,850	5	965.00	124,485.00	168,392.50	292,877.50
Ouest Algérienne:								
Kelat to Sidi del Abbes.....	51.572	Nov. 30, 1874	h 2,090,190	5	1,440.00	74,252.35	104,508.50	178,761.85
Sidi bel Abbes to Ras el Ma	100.012	Aug. 22, 1881	i 3,281,000	4.85	1,440.00	144,160.80	156,128.50	303,279.30
Oran (La Senia) to Ain Temouchent.	80.492	Aug. 5, 1882	j 1,987,900	4.85	1,351.00	108,744.70	94,413.15	205,157.85
Tabla to Tiemcen k	64.492	July 16, 1885	l 3,281,000	5	1,351.00	86,464.00	164,050.00	250,514.00
Bida to Berroughia e	84.492	July 31, 1886	m 5,211,000	4.85	1,254.00	105,378.00	252,733.50	348,111.50
Franco-Algérienne:								
Kraïfalah to Mecherchia.....	137.003	July 28, 1885	n 521,100	5	1,254.00	172,623.00	24,055.00	196,678.00
Mecherchia to Ain Seffa.....	102.193	July 31, 1886	o 1,568,125	4.85	965.00	98,616.25	16,054.06	174,670.31
Thizi to Mascara.....	12.193	July 3, 1884	p 308,800	5	1,254.00	15,054.00	15,440.00	30,494.00
Mostaganem to Tiarret.....	202.193	Apr. 15, 1885	q 4,149,500	5	1,254.00	283,409.00	207,475.00	490,884.00
Total.....			94,900,876			4,828,517.70	4,835,622.51	8,664,140.21

a Annual average for fifteen years, 1872 to 1886, inclusive. b Including \$180,455 for complementary accommodations. c Lines in course of construction. d, e, f Including \$14,600, \$13,402.56, and \$16,485.94, respectively, for redemption of bonds. g Including \$896,000 for complementary accommodations. h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z Including, respectively, \$289,500, \$289,500, \$289,500, and \$115,800 for complementary accommodations; according to the terms of the contracts the \$884,300 thus obtained can be spent on the whole without limitation for any special line. k In course of construction; open to La Moulrière, distance 34 kilometers. m Including \$886,000 for complementary accommodations. n Sum necessary to put the line in working order, building expenses between Mostaganem and Mecherchia having been paid by the Government. o, p, q Including, respectively, \$67,900, \$19,300, and \$193,000 for complementary accommodations.

THE PORT OF ALGIERS.¹

As Algiers has become such an important coaling station for British vessels, an official description of the port may not be out of place. This has been published by the Chamber of Commerce in a lithographed volume, which, however, is not accessible to the general public. I subjoin an epitome of it.

This port, which consists of a single great sheet of water and a small basin, called the Darse, has a quadruple character:

(1) It is a military harbor. The Darse is entirely reserved for the marine and has several buoys in the south portion with a "stationaire" always present there. This portion of the harbor is not considered officially as a military port, but the minister of marine has issued orders for it being always kept for the use of the navy.

(2) It is a fishing port. There are 412 fishing boats, 3 of which are steamers, and 1,358 men are engaged in this industry.

(3) It is a harbor of refuge.

(4) It is a mercantile port, and takes eighth place among the harbors of France.

It ought, in the opinion of the Chamber of Commerce, to have a double future:

(1) As a port of repairs, if not of construction, as it contains two docks which are not yet sufficiently used.

(2) As a port of supply for English vessels going toward the East; in this respect it has wonderfully increased in importance of late.

The three first characters require a great surface of water; the fourth a great extent of quay. The surface contains 89 hectares (222½ acres), a superficies sufficient for its requirements, but the length of its quays is by no means equal to the demands of commerce. There are only 1,280 meters of quay available for a tonnage of 746,993 or 583 tons of merchandise for every meter of quay.

The commerce of the port of Algiers contains two items which greatly encumber the quays; the exportation of wine, which necessitates the return of empty casks, and the large stocks of coal which have to be kept up by the various firms engaged in supplying the vessels taking in coal here.

The following works are necessary to make the harbor as safe and commodious as it ought to be:

(1) The actual entrance should be narrowed and another one made in the south part of the mole. This work is estimated to cost 800,000 francs (£32,000), and is actually in progress.

(2) The crowning part of the northern jetty should be replaced by better work. This also is in progress, and will cost 340,000 francs (£13,000).

¹ Extracts from the annual report of the British consul-general at Algiers, March 20, 1894.

(3) The retaining walls of the admiralty "ilot" require to be renewed. A credit for executing this has not yet been granted.

(4) The northern jetty should be widened.

(5) The same jetty should be lengthened.

These two propositions have been approved by a nautical commission. But even these improvements are not sufficient for the requirements of the marine. The engineers are at present considering—

(6) A project for creating an inner harbor in the bay to the east. This is being taken into consideration by the competent authorities.

In the meantime, the chamber of commerce has solicited permission to erect sheds on the south terreplein of the fort, independent of anything that the Government may decide on doing, and it has purchased two new cranes for erection there. The railway company (Paris-Lyons-Méditerranée) has applied for permission to construct lines on the new quay for improving transportation around the harbor.

Lastly, the lighting of the port has been improved by placing two luminous buoys at the entrance.

Formerly, vessels going to and returning from the East used to stop at Gibraltar and Malta to coal. Now Algiers has been found a much more convenient stopping place, as it divides the distance better between Port Said and the United Kingdom, and it is free from the unusually strict quarantine regulations which frequently are enforced at our own Mediterranean ports. Two mercantile houses at Algiers, Burke & Delacroix and M. Prosper Durand, representing Strick & Co., of Cardiff, made great efforts to induce vessels to call here, and their success caused other firms to open branches at Algiers to participate in the business, the most important of which is Worms, Josse & Co.

TUNIS.¹

The general shipping is mainly in French and Italian hands, the tonnage of the former amounting during 1893 to 1,026,685, and of the latter to 610,139. The chief points of call are Goletta, Tunis, Sfax, and Susa, which, together, monopolize more than half the tonnage.

Regular steamship communication with the ports of the Regency is kept up by the French Compagnie Générale Transatlantique, whose steamers ply between Marseilles and Tunis three times a week. They also make two weekly tours of the southern ports, the first starting via Malta and Tripoli, and the other in the reverse direction. These ships are subsidized by the French Government and have good passenger accommodation.

The other French companies engaged in the Tunisian trade are La Société Générale des Transports Maritimes, Compagnie de Navigation

¹ Extracts from the annual report of the British consul-general at Tunis, June 15, 1894.

Mixte, Compagnie des Bateaux à Hélice du Nord, and the Compagnie de Navigation Havraise Péninsulaire.

The ships of the Italian line (Florio-Rubattino) leave Genoa weekly, via Leghorn and Cagliari, for Tunis, the coast of Tripoli, and Malta; and for Palermo, via Marsala, Trapani, and Pantellaria, returning by the same routes.

The Danish steamers belonging to Det Forenede Dampskibs Selskab after calling at Antwerp, touch at Tunis monthly and proceed to the Piræus.

The Austro-Hungarian Adria Line of steamers ply bimonthly between Trieste and Tunis, visiting Messina and Malta.

A Belgian steamship company has also lately started a regular monthly service between Antwerp and Tunis.

Gollcher & Sons, of Malta, have established regular steamship communication between that island, Trieste, and Tunis.

Knotts's Prince Line of steamers, referred to in my last report as having opened regular steamship communication between Great Britain and Tunis, will probably send boats this year from Manchester to Tunis every fourteen days, calling occasionally at Algiers. This arrangement will not interfere with their services to Hamburg, Antwerp, and Tunis, and to Antwerp, London, and Tunis.

The ships that entered the new Tunis Basin since the opening of the canal on June 1, 1893,¹ numbered 323 steamships and 225 sailing vessels, of 237,109 aggregate tonnage, with 70,842 tons of merchandise; the departures were 317 steamships and 223 sailing vessels, of 231,939 aggregate tonnage, with 31,632 tons of merchandise.

The Italian Steamship Company (Florio-Rubattino), which continued to load and discharge at Goletta, have now decided to take advantage of the new port, and made their first entry on April 23 of this year.

The completion of the works of the port has been confided by the Tunisian Government to Messrs. Alexis Duparchy and Simon Préault, a French firm, who have also undertaken to construct new ports at Susa and Sfax.

¹ The British consul-general at Tunis, in a report dated August 29, 1893, says:

"Tunis, hitherto known as an inland town, situated on a shallow lake, navigable only by small craft, has now become a seaport by the construction of a canal through the lake, placing it in communication with the Gulf of Tunis. The undertaking was started in 1855 by La Société des Batignolles, and was sufficiently completed this year to open the port to navigation. The formal inauguration took place on May 28, in the presence of the Bey, the French resident, the foreign representatives, and all the civil and military authorities of the place. Ships belonging to the French and Austrian lines have since then entered the Tunis Basin regularly, but the Italian Rubattino Line of steamers and many other vessels continue to load and discharge at Goletta.

"A submarine telegraph cable was laid in the commencement of this year between Marseilles and Tunis, and opened to the public on February 19. The cable passes close to Bizerta, but has not yet been landed at that port."

According to the terms of the concession, the Tunisian Government has made over to the concessionaires the three ports, with all their movable and immovable appurtenances.

The capital of the company will be £120,000, which may be increased by order of the Government to an additional equivalent sum. The caution money is fixed at £40,000, to be deposited in the Tunis treasury as security for the completion of the works.

On the other hand, the Government guarantees an annual revenue from the ports of £16,200, to be paid from the completion of the works at each port in the following proportion :

Port.	Value.
Tunis.....	£ 5,443 4
Sfax.....	7,646 8
Susa.....	3,110 8
Total.....	16,200 0

The right of sale of a portion or the whole of the land is reserved by the Government, the concessionaires obtaining one-third and the Government two-thirds of the proceeds.

THE PORT OF BIZERTA.¹

Bizerta is a port of Phœnician origin, and was formerly called Hippo Zaritus, distinguishing it from Hippo Regius, a port existing at the time in proximity to the site of the present Bone in Algeria. The place fell into the hands of the Arab conquerors of north Africa in 662, and on the expulsion of the Moors from Spain in 1492, many emigrants settled in the town, and founded a quarter which still bears the name of Andalous. When Charles V of Spain invaded Tunis, in 1535, Bizerta was occupied and strongly fortified, and it was subsequently bombarded, in the eighteenth century, on several occasions by the Venetian fleets. From that period up to the French occupation in 1881, the port remained in comparative obscurity.

The first improvements were undertaken on a small scale by the Government of the Protectorate in 1886. At that time, the lake was connected with the sea by the ancient channel, which passed through the town, dividing it into three sections and giving it a quaint and picturesque appearance. The anchorage in the harbor was unsafe, owing to its exposure to the north and northeast. There was only about 3 feet depth of water in the canal, the entrance was choked with sand, and the quays were in a ruinous state.

It was not until 1888 that the project of opening up the Great Lake by a shipping canal and of erecting a new port at the entrance was entertained by the Government. The undertaking was confided to

¹ Extracts from report of British consul-general at Tunis, August 25, 1894.

Hersent & Couvreur, in 1889, who obtained a beylical concession in the following year and formed the Bizerta Port Company, under their personal direction.

The construction of a railroad to connect the port with the city of Tunis by a branch from Djedeida, on the Medjerdah main line, was commenced in 1893 by the Bone-Guelma Railway Company, and is now far advanced toward completion.

Unlike other ports of the Regency, Bizerta is situated in a mountainous district, well adapted to European colonization, both in point of climate and agriculture.

The Arab town lies on the northern slopes, above the old canal and port; below it, on the land acquired by the port company through the filling up of a large portion of the old channel and of the shallow waters of the borders of the lake where the fisheries formerly existed, an European quarter is in course of development on a predevised plan of the company.

The entrance to the new canal is about three-fourths of a mile to the southeast of the old channel, and the outer harbor will be protected from all weathers, as well as from an accumulation of sand, by the construction of two solid stone breakwaters, called the northern and eastern jetties. The former has now attained its full length of 1,090 yards, and the latter, already well advanced, will be about the same length when completed, affording a passage from the sea about 416 yards wide. The area thus inclosed by the two breakwaters will measure 1,000 square yards, with a good anchorage for ships of large draft.

The cutting of the canal, about 1 mile in length, traverses a low and sandy tract of land in a straight line with the entrance from the sea and a headland in the lake called Sebra, where a light-house will be erected, which will considerably simplify the navigation of the canal at night.

The quays now being constructed are situated at the lake end of the canal, close to the railway terminus, and at a short distance beyond them, on the same side, is the spacious bay of Sebra, with from 3 to 4½ fathoms of water, affording excellent anchorage for shipping.

The approach to the lake from the canal is about 5 miles in length and varies from one-half to 1 mile in width, resembling in many respects a Scandinavian fiord. The whole lake measures about 36 miles in circumference, covering a surface of about 12 square miles, and has from 6 to 7 fathoms depth of water, extending without interruption from the port throughout a considerable portion of the lake, up to its southern shores, where it is connected by the River Tinja with Lake Ishkel. The river is about 3 miles long, and navigable only by vessels of light draft. During the greater part of the year the level of Lake Ishkel is above sea level at Bizerta, but the evaporation that takes place in the dry season causes a fall in its waters and conse-

quently a change in the flow of the river. On the southeast side of the lake, rising abruptly from its marshes, is the hill of Djebel Ishkel, with an altitude of about 1,500 feet, thickly wooded on the lower slopes but bare and rocky near the summit.

The railroad, after leaving Djedeida, passes through a fertile district to the town of Mateur. From thence it skirts the hill of Djebel Ishkel, and after crossing the River Tinja follows the western shores of Lake Bizerta up to the new port.

Bizerta, with its railroad and fine harbor, will undoubtedly attract in due course of time a certain portion of the trade of northern Tunis, and its exceptional position in the Mediterranean will probably enable the Bizerta Port Company to realize their project of establishing a convenient coaling station for the numberless vessels that annually pass in proximity to the port, on the highway between the Straits of Gibraltar and the East.

OTHER RAILROAD ENTERPRISES.¹—The convention between the Tunisian Government and the Bone-Guelma Railway Company for the construction of the several lines connecting Tunis with the principal southern seaports and Kairwan is still awaiting ratification by the French Parliament. This has been the chief cause of the long delay in the realization of these promising schemes for the development of the rich resources of the country.

TRIPOLI.²

Nothing remarkable has taken place in shipping at this port during 1894. The total number and tonnage and class of vessels which visited the place have been much the same as in former years, and the countries whence they arrived and to which they departed have not differed; only the relative positions of two nationalities have changed. Whereas French shipping hitherto headed the list as having the largest tonnage, it is Italian shipping which now occupies the foremost place, and this position which the latter has acquired is not likely again to be reversed for some years to come. This change, however, does not necessarily imply that the carrying trade is greater under the Italian flag. It is due simply to the fact that nearly all the French vessels which are in the habit of calling here have lately been remeasured, whereby a considerable reduction was made in their tonnage. As far as cargo is concerned, not much is conveyed in either French or Italian vessels, which, being nearly all subsidized mail steamers, sailing under restrictions which do not permit of their making long stays at this port, have no special object in securing it.

¹ Extract from British consular report of June 15, 1894, previously quoted.

² Extracts from annual report of British consul-general at Tripoli, March 26, 1895.

The British steamers of the Prince Line, which first touched these shores in 1893, continued to pass by this port on their way to the Levant, but it is uncertain whether they will be able to secure sufficient freight to induce them to follow the same route in the future. Malta is so close at hand and in such frequent communication with London and Liverpool, that merchants find it more convenient and expeditious to have their goods sent through that island, although they have to be transhipped, than by steamers coming here direct.

Nothing of importance has been undertaken under the head of public works except, perhaps, the construction of a low embankment or quay along the east beach outside the city walls. It is of no use to shipping, as even boats can not get alongside; but when completed, will, if strong enough, protect the shore from the encroachments of the sea, and serve as a sort of promenade for pedestrians.

CARAVAN TRADE.

The year was disastrous for the caravan trade and all interested therein. In former years troubles in the interior were not uncommon, but they were more or less of a local character, and rarely assumed serious proportions or obstructed the routes for any lengthened period. Information relative to caravans was always obtainable, but this time, owing to the gravity of affairs in Bornu and the extent to which disturbances spread, none was forthcoming for ten months, and at present nothing positive is known. Since September, 1893, when the first news of Rabah's occupation of Baghirmi, situated to the south of Bornu, was received, trade fell off; but as people could not foresee the course events would take, they continued to dispatch caravans to those regions, though with less goods than formerly. Rabah, however, did not stop at Baghirmi, but invaded and overran Bornu, the routes to which country were in consequence closed. Tripoli traders who happened to be there at the time with all their stock in trade, having sided with the Sultan of Bornu against Rabah, were, on the defeat of the former, either killed or deprived of their property, the few who escaped finding their way to Wadai, whence they are expected to return here via Benghazi. The greatest portion of the trade of Tripoli with the interior being with Bornu, these events caused much consternation among merchants, who at once abandoned all intentions of equipping more expeditions to that country and suspended others to Wadai. The Ghadameses also, who are the oldest and most enterprising in this trade, were discouraged, and did not transact one-tenth the amount of their usual business. Caravans which left Bornu, the Soudan, and Wadai before the troubles broke out arrived here safely, but no others have since followed.

The following extracts from the report of the British consul general at Tripoli, March 24, 1892, give some additional particulars as to the caravan trade.

"The trade routes have remained comparatively undisturbed, only occasional rumors of difficulties having reached Tripoli, but nothing calculated to prevent the free circulation of caravans. From Tripoli to Fezzan the road is at all times practicable, as the Turkish authorities maintain a certain amount of control over the Arabs; but wells are not so frequent, as from Fezzan to the Soudan, the longest march without wells being about five days. The progress of a caravan after leaving Tripoli does not exceed 12 miles per day, the journey from Tripoli to Ghat taking generally seven to eight weeks, and from Ghat to the Soudan ten to twelve weeks. During the desert part of the journey the food carried is mostly paste made of pounded dates; but as supplies of food are obtainable at short distances no great quantity either of food or water is carried.

"The caravan trade is carried on by two classes of merchants, the most important being Ghadamsi, an intelligent and business-like tribe of Arabs, and the wealthiest of the native Tripoli merchants. Their operations are confined principally to Ghat and the Soudan. The Arabs are the least important traders. They handle principally goods intrusted to them by Jewish and European merchants of Tripoli, and have their principal trade with Bornu.

"Under normal conditions caravans arrive at and leave Tripoli in small numbers, varying from 40 to 100 camels, between April and October, and during the same months from Ghat and Mourzouk to and from the interior, but in times of tribal disturbances only one or two departures take place, of 500 to 700 camels, at the beginning and end of summer. As a rule, they are fairly well provided with Winchester repeating rifles, and it is an exceedingly rare occurrence that even a small caravan is attacked and pillaged, and never a large one; but, on the other hand, the risk of crossing any belt of country considered dangerous is not often undertaken, the Arabs preferring to wait even months until the road is safe.

"Ghat is an important intermediate center between Tripoli and the Soudan, where a great amount of interchange of goods takes place, and it is the real point of arrival and departure for the Soudan. Camels are, in most cases, exchanged there, the whole journey rarely being completed with the same set, unless in times of scarcity, when they are allowed to rest one or two months before resuming the journey.

"On leaving Ghat, the road lies across a stretch of country sparsely populated by Arab tribes, mostly Toaregs. Here guides are taken by caravans, and a toll is exacted by the various chiefs for permission to pass unmolested through their territories, and for affording protection to the boundaries of the neighboring tribe. This process is repeated many times before arriving at Kano, one of the main resting places for the caravans. It is a town with a numerous black population, ruled by a native chief, who, in consideration of certain presents and

tolls, affords shelter and protection. Here, on arrival, quarters are taken up by the Arabs and goods opened for sale and native products bought. The length of stay, varying from six to twelve months, depends upon the scarcity or otherwise of native products. A rude currency, consisting of strings of small shells, of different values, is much used, also a few Maria Theresa dollars, but bartering is most frequent. From this point some few Arabs make their way to Sokoto and Timbuctoo, but the trade they do is not important."

EGYPT.

The special features of transportation as regards Egypt are the great River Nile, the Suez Canal, and the caravan system. The Nile, flowing from equatorial regions and emptying into the Mediterranean, with an estimated course of over 4,000 miles, is navigable for small vessels for the greater part of its length, and is, of course, an important feature in the internal communications of Egypt and the great equatorial regions.

In a report to the Department, dated June 11, 1890, printed in Special Consular Reports, "Canals and Irrigation," pages 255 to 278, inclusive, Consul-General Schuyler, of Cairo, gives an interesting description of the Nile, with more particular reference to the system of irrigation employed to fertilize its basin. Egypt, or, more strictly, the cultivable land in Egypt, he says, is composed of two parts, the Nile Valley and the Delta. The long narrow valley of the Nile, extending in a general direction north and south for 559 miles from Assouan to a few miles north of Cairo, is scarcely wider in any place than $15\frac{1}{2}$ miles, and once or twice draws close to the river, but has an average breadth of $7\frac{1}{2}$ to $8\frac{3}{4}$ miles. This is called Upper Egypt, and contains about 2,400,000 acres of cultivable land.

Among the Libyan Mountains, about 56 miles south of Cairo, is an opening, and beyond this a depression, in circular form, about 25 miles in diameter, called the Fayoum. It is watered by a canal brought from the Nile. In one part of it, in old times, existed what was known as Lake Moeris. The cultivated land in the Fayoum amounts to 220,000 acres, besides which there are 60,000 acres more that could be reclaimed. This oasis forms a part of Upper Egypt.

Just north of Cairo the river divides. Formerly, there were seven main branches, but now there are only two, although the older ones are to some extent represented by canals. A triangle of cultivable land is thus formed, about 100 miles long by $87\frac{1}{2}$ miles at the base on the seashore. This is called the Delta, or Lower Egypt, and contains a cultivable area of 4,000,000 acres, 274,000 of which are at present cultivated and pay taxes.

The bed of the Nile is a trench cut into the strata of mud which it has brought down for so many years. Sometimes, for a long distance,

it is quite straight; at others it is tortuous, and it frequently changes its course. The width of the river is variable. At low water it runs between sharply cut banks and shoals of sand and mud, and is often divided into various channels. After midwater the river is about even with its banks, varying in width from one-third of a mile to $1\frac{1}{4}$ miles, and is even separated into branches by islands, sometimes several miles long. It is narrowest opposite Cairo, where the width is reduced to about 787 feet. At high water, especially during a great rise, it would cover the entire valley were the land not protected by dikes running the whole length of the banks of the river. The branches of the Nile, which include the Delta, have very much the same irregularities as the main stream. During the ten years from 1872 to 1881, the level of the lowest water varied between 276 feet 5 inches, and 285 feet 3 inches above the Mediterranean, giving an extreme variation at lowest water of 8 feet 10 inches. During the same time the highest flood levels varied between 300 feet 1 inch and 309 feet $\frac{1}{2}$ inch, showing an extreme difference of 9 feet $\frac{1}{2}$ inch.

THE SUEZ CANAL.

This great ship canal, connecting the Mediterranean with the Red Sea, extends from Port Said on the former to Suez on the latter, a distance of 87 miles. Of this, 66 miles are actual canal and 21 miles lakes. The canal is without locks. It was opened for navigation November 17, 1869, a little over ten years from the commencement of construction by a company organized by the French engineer Ferdinand de Lesseps. The total cost of construction was nearly £16,000,000. Originally, for about four-fifths of its length it was 327 feet wide at the surface of the water, 72 at the bottom and 26 deep. For the remainder it was 196 feet wide at the surface of the water, the width at the bottom and the depth being the same. But in recent years it has been widened and deepened in order to meet the requirements of the immense traffic passing through it. A canal was also built to bring fresh water from the Nile at a point near Cairo. This canal reaches the salt water canal at Ismailia and then runs almost parallel to the ship canal to Suez. It is about 40 feet wide and 9 feet deep, and is used for navigation as well as for irrigation. In 1875 the British Government bought the interest of the Viceroy of Egypt in the canal.

The building of the canal shortened the distance between London and Bombay by the old route around the Cape of Good Hope from 11,220 miles to 6,332 miles. It may be said that the trade of the world passes through the canal, and the shipping using it is steadily increasing. On March 1, 1887, navigation at night was begun by means of the electric light, shortening the time of passage about one-half, or to about sixteen to twenty hours.

A report from Consul-General Penfield, at Cairo, February 9, 1895, published in Consular Reports for April, 1895, page 589, says:

During the year 1894, the number of vessels passing through the Suez Canal was 3,352, being 10 in excess of the preceding year, and the receipts from tolls amounted almost to \$15,000,000. The number of ships using the canal in 1874—twenty years ago—was only 1,264. These figures, compared with those of the present day, show how completely the canal has revolutionized the channel of traffic between the Far East and Europe. The largest business year the canal has ever had was 1891, when 4,206 steamers passed through. The application of the electric light to marine purposes is now so general that nearly 95 per cent of the vessels using the canal last year were enabled to steam at night. Not one mercantile ship flying the United States flag entered the canal last year, although many cargoes destined for America passed through in British ships. The detailed record of the traffic in 1894 is appended:

Nationality.	Steamers.	Net tonnage.	Traffic receipts.	Nationality.	Steamers.	Net tonnage.	Traffic receipts.
American	α 5	3 001. 71	\$4, 826	Spanish	28	82 269. 52	\$157, 534
Austrian	78	178, 998. 64	340, 200	Turkish	33	39, 395. 56	107, 492
British	2, 394	6, 009, 902. 98	10, 945, 074	Japanese	6	12, 103. 56	22, 790
Dutch	188	352, 451. 28	653, 400	Portuguese	2	672. 29	1, 217
French	184	483, 430. 93	891, 380	Egyptian	1	810. 28	1, 468
German	294	624, 555. 18	1, 139, 965	Guatemalan ..	1	145. 02	263
Italian	63	119, 084. 93	200, 861				
Norwegian	40	65, 962. 71	117, 833	Total ...	3, 352	8, 039, 105. 97	14, 770, 061
Russian	35	77, 421. 38	162, 938				

α War ships and yachts.

The report of the British consul at Port Said, July 13, 1894, says the percentage of ships using the electric light to pass through the canal has been, in 1890, 83 per cent; 1891, 88 per cent; 1892, 90 per cent; 1893, 92 per cent. The average time occupied in passing through the canal was, in 1893, with the electric light, nineteen hours fifty-two minutes; without the light, thirty-one hours, twenty-four minutes. The time occupied in transit is slowly but steadily decreasing. Out of the 3,341 ships which passed through the canal in 1893, 2,300 had a draft of under 23 feet 4 inches; 985 drew between 23 feet 4 inches and 26 feet; 56 had the maximum draft of 26 feet.

HIGHWAYS-

In a report from Acting Consul-General Grant, of Cairo, April 9, 1891, published in Special Consular Reports, "Streets and Highways," page 538, the following information is given as to the roads of Egypt:

In the several towns of Egypt, except Cairo and Alexandria, there are very few metaled roads. The others are merely beaten earth kept wet and smooth, and considering the climate and the smallness of the traffic, they answer sufficiently well. Until two years ago, it may be said there were no country roads at all, and it would have been impossible to convey agricultural products on a wheeled cart from one center of population to another. A beginning has been made, first in Dakahlieh and in Sharkieh, and then throughout the other provinces, of constructing simple unmetaled roads, 5 meters wide, with bridges over canals, leading generally to railway stations and sometimes to points on the river. Their construction is being defrayed by a local tax not exceeding 20 or 25 cents per acre for one year only. They are to be maintained at Government expense. It is too soon to pronounce on the value of these roads, but they are very popular among the people.

RAILWAYS.

The Statesman's Year Book for 1895 gives the total length of the railway system of Egypt as being 1,255 miles, with 30 miles under construction. The telegraphs belonging to the Egyptian Government, according to the same authority, were, at the end of 1892, of a total length of 1,922 miles, the length of the wire being 6,763 miles. The Government has also established telephone communication between Cairo and Alexandria, and has given concessions to a telephone company for urban telephone lines. The Eastern Telegraph Company also by concessions has telegraph lines across Egypt from Alexandria, via Cairo, to Suez, and from Port Said to Suez, connecting their cables with England and India.

United States Consul-General Cardwell, of Cairo, in a dispatch of January 10, 1887, published in Consular Reports, September, 1887, page 727, says the first railway built in Egypt was that between Alexandria and Cairo in 1845. Its purpose, besides connecting the two great cities of Egypt, was to form part of the railway line between Alexandria and Suez, now partially disused, because of the opening of the great interoceanic canal across the Isthmus of Suez. The railway system has now been considerably extended, so that it embraces connections between all important points in the Delta, as well as between Cairo and the Fayoum and Assiout. There are no viaducts, tunnels, etc., and only two very expensive bridges, which span the two branches of the Nile, on the Alexandria-Cairo line.

The mode of construction is by raised earthen roadbeds only a few feet high, upon which are laid cast-iron chairs resembling huge overturned saucers, separated by transverse round bars firmly fastened to the chairs. Two chairs thus connected form the parallel ties and the rests for the rails, and the iron way thus formed is as solid and substantial as though laid on live oak ties firmly ballasted in rock.

In a subsequent report, of June 16, 1888, published in Consular Reports, July, 1888, page 60, Mr. Cardwell says the railways and telegraphs of Egypt were built by the Government. They belong to the Government and are operated by it under the direction of three commissioners. Besides the railways and telegraphs, the commission has attached to its administration the port of Alexandria.

The recent development of the railway service of Egypt is given in a report from Consul-General Penfield, of Cairo, dated April 6, 1895, as follows:

In no way is the industrial progress of Egypt better illustrated than by the present development of its railway system. Railway building is not a recent innovation in the ancient land of the Nile, however, as the first line—from Alexandria to Cairo—dates from 1852; and five years later, the English engineer, Robert Stephenson, completed rail communication between Alexandria and Suez, making the "overland route" to India as practicable for freighting as it had been for passenger traffic. This is now almost wholly superseded by the great canal of De Lesseps.

It is said that Egypt, in proportion to population, has more railway mileage and better service than Austria, Hungary, Spain, or Portugal. All railways are Government property, with the exception of a short suburban road from Alexandria along the Mediterranean to Ramleh, a 15-mile line connecting Cairo with the health resort of Helouan, and a steam tramway on the bank of the Suez Canal, joining Port Said with Ismailia. These private enterprises, as well as the Government lines, are very profitable. The income of the latter is pledged to certain European creditors of the country, as a partial consequence of the extravagance of Khedive Ismail.

A net work of rails spreads over most of the Delta, and the main line has for two or three years extended southward in the Nile Valley to Girgeh, 336 miles from Cairo. Two years hence, the road will be completed to Keneh, 66 miles farther south; and contracts have just been signed for carrying it to Assouan, the frontier town of Egypt, at the first cataract of the Nile, and 710 miles from the Mediterranean. This terminus is expected to be reached in time for the Upper Nile tourist traffic of 1897-98.

The moderate speed at which all trains are driven, save the expresses, and the cheapness of native labor, permit the working expenses to be kept much below the European average. A level country with frosts and violent storms unknown, makes railway construction a simple matter. Rock blasting, tunneling, excavating, and trestle building are practically unnecessary. Bridging the Nile, however, is expensive. The present cost of construction in the Delta, where bridges over irrigating canals are numerous, averages \$28,000 per mile of normal gauge; but in Upper Egypt the cost is not more than \$25,000. The narrow-gauge (1 meter) extension from Keneh to Assouan is to cost only \$12,500 a mile.

Most of the locomotives come from Belgium, and the first-class passenger cars from England. Rails are also supplied by England, and bridge work by Belgian and French firms. Most of the engineers and firemen are natives, the former receiving from \$30 to \$75 per month and the latter from \$12.50 to \$20 per month; the few European engineers employed average \$100 a month. The railways are managed by an international administrative board of three, the chairman of which is an Englishman. The others are, respectively, French and Egyptian, and heads of departments represent nearly every European country. Sealed tenders for all materials are invited from English and other European industrial centers, and the most advantageous offers accepted.

The appended statistical table gives information valuable to anyone interested in railway economics. The enormous increase of passengers carried, the reductions in passenger and freight charges explaining the small increase of receipts, is specially worthy of notice:

Year.	Total receipts.	Passengers carried.	Mileage open to traffic, without sidings.	Per cent of operating expenses to receipts.
1888.....	\$6,350,000	4,004,882	944	45
1889.....	6,505,000	4,378,453	946	44.9
1890.....	7,040,000	4,696,286	961½	43.3
1891.....	8,155,000	5,612,562	961½	43.3
1892.....	8,400,000	7,047,285	1,000	43.3
1893.....	8,095,000	9,301,081	1,081	43.2
1894.....	8,870,000	9,827,813	1,088	43.2

Street railways with electric traction are promised for Cairo next year, the concessionaires being Belgians; and Alexandria is expected soon to follow suit. There are several bidders for a concession for an electric tram line from Cairo to the Pyramids, a distance of 10 miles, to accommodate the enormous number of winter visitors to the capital. The Egyptian ministry recently had from a Frenchman a serious application for permission to build a "funicular" railway to the top of the Great Pyramid. The request was not taken into consideration.

STEAMSHIP LINES, CARAVANS, ETC.

The following report by Consul-General Penfield, dated October 23, 1893, printed in *Consular Reports*, January, 1894, page 205, furnishes information as to the steamship lines and caravan trade:

Favored to a remarkable degree for direct shipments from every European country of importance, it is regrettable that Egypt can not thus avail herself of American products and manufactures, which explains why Great Britain, France, Germany, and Austria enjoy almost a monopoly of Egypt's growing trade. Direct and regular steam communication with the United States would unquestionably secure a ready market in Egypt and other Mediterranean countries for many articles the outcome of American soil and manufacturing genius.

The route most used at present for shipments to Egypt is by way of Liverpool, from which port to Alexandria the Cunard, Moss, and Papayanni lines maintain regular services, while from Hull and other English ports the Leyland Company dispatches steamers periodically. From London the important Peninsular and Oriental, Orient, and British India companies weekly send steamers to Alexandria or Port Said, and the Anchor and Clan lines from Glasgow bring freight to Port Said and other Suez Canal stations.

A much-used route for freight from New York is that to Marseilles by the Fabre Line, with transshipment to Alexandria by the Messageries Maritimes Company. The North German Lloyd steamers to Genoa connect at that place with the Peninsular and Oriental boats for Alexandria, and in the winter season this company sends several of its best vessels direct to Alexandria. Shippers are hoping that the company will soon feel justified in maintaining regular communication throughout the year between the United States and Egypt.

Almost the only direct shipment from the United States is petroleum in chartered sailing ships, which sometimes pick up a cargo of cotton or rags for the return voyage.

Goods are usually landed at Alexandria direct from the vessel, but lighters are frequently employed. Alexandria has commodious and modern docking facilities. Vessels passing through the Suez Canal have no fixed rule for landing freight at Port Said, Ismailia, and Suez; but lighters are generally made use of in conveying goods to the customs sheds.

At Alexandria and the canal ports there are well-equipped warehouses, and merchandise is seldom exposed to the elements. It should be borne in mind that rain rarely falls in Egypt, and frost is practically unknown.

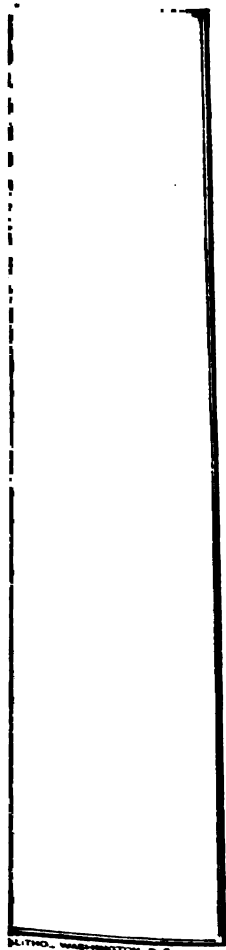
Goods for Cairo and places in the Delta and for important towns in the Nile Valley as far above Cairo as Ghirgeh are carried by the governmental lines of railway and are subject to about the same treatment as in other countries. If shipments are destined for the interior and remote districts in the direction of the Soudan and between the Upper Nile and the Red Sea, where the only transport is by camel caravans, packages should not weigh more than 300 pounds, the size being practically immaterial.

PROVINCE OF SUAKIN.¹

As regards the history during the past year, I have again to report that the country was disturbed by raids at the commencement of the year, and that trade with the interior during the first three months was very insignificant. After the month of March, the Berber road was open, and, throughout the year, caravans passed regularly to and fro.

¹ Extracts from the annual report of the British consul at Suakin, March 21, 1894.





LITHO. WASHINGTON D. C.

Seventeen steamers represented the total of British shipping which entered the port during the past year. These were the Bombay and Persian Gulf boats with general cargoes. To these I add two steamers belonging to the Eastern Telegraph Company. The Khedivial Steamship Company continues its fortnightly service from Suez, but it is much to be regretted that the state of trade does not permit some other company to enter into competition with them, for their freight rates are exceptionally high, and their accommodation none of the best.

MADAGASCAR.

Owing to the peculiar conditions surrounding the commercial life of this great island, this subject, "The highways of commerce in Madagascar," can not be discussed analytically. Madagascar has neither canal nor river navigation, neither railway nor roadway systems or lines as these terms are understood in civilized communities. Even such ocean steamship lines as periodically enter these ports may at any moment be withdrawn. The conquest of the island by France would ere long drive the English line to seek other ports, while the failure of France in her Madagascan operations would result in the withdrawal of the French line from all ports not directly under French dominion.

The appended outline map will show all of the main traveled routes, whether water or foot-trail, both through and around the island, by which the commerce of the interior comes down to the coast, and returning distributes that of the coast.

INLAND ROUTES OF TRAVEL.

The inland water navigation is carried on exclusively by native dug-outs or canoes. The inland routes of travel outlined in red upon the map also embrace all the inland water navigation of the island, which may be said to be but an adjunct to the regular method of transportation in Madagascar, and these routes are those usually traveled by the borozans, or porters, whether of persons, or freight, in journeying from and to the points indicated. Often it is but a trail wide enough for two men to walk abreast; again, a series of such trails, side by side. Here and there, short cuts occur, made by nimble or erratic feet; usually the trail goes winding on unbroken, save by natural obstacles. Of course there are innumerable villages on all these routes, hamlets of but a few thatched huts; again, large and populous towns, commonly used as stopping places, or way stations; and many rivers and rivulets, lakes, and bodies of water, occur, none of which appear upon the map. For instance, from Tamatave, down the coast southward, almost to Manakara, extends a chain of lakes, or lagoons, from one-half a mile to 3 miles apart. Across these rivers, up and down these lakes and

bodies of water, the native canoe is the ferry and assists in the transportation of freight and passengers. Each canoe is furnished with a steersman, but the passengers must do the paddling. No European has, as yet, made the journey from Ambohimandrose to Fort Dauphin in the south, although the natives have a regular highway, said to be constantly used by them between these places; hence, the route is only indicated by dotted lines.

The carriage of freight and passengers is done exclusively on the shoulders of men. Packages of freight, when very heavy, require a very large number of porters. An average porter's (borozan's) load ranges from 60 to 80 pounds for constant traveling, although some men carry as high as 120 to 150 pounds each. Passengers are carried in a kind of seat slung between two poles. Each passenger (adult) needs four or more porters, and, in rough or heavy country, eight or more. Where the passenger weighs over 180 pounds a still larger number of porters is requisite. Beasts of burden are practically unknown in Madagascar, men being used exclusively in their places; and as this has been going on for generations the porter, or borozan, is readily distinguishable by the hump, or roll of callous sinew, this kind of carriage has developed, to a most remarkable degree, on the back of his neck, over and between both shoulders, near the neck-base.

RAILWAY POSSIBILITIES.

The engineering difficulties to be overcome in constructing a railroad up to and across the central plateau from the east coast are said to be simply appalling, but from the west coast, although in places it will be a difficult undertaking, the prospect can not be said to be disheartening. For a railway around the coast, east or west, there are but few engineering obstacles of any gravity. The mountains, except in isolated places and in the northern peninsula, are fully 20 to 30 miles inland on the east and 60 to 100 miles inland on the west coast, with an undulating plain of partially timbered and grass lands extending to the coast line.

NAVIGABLE RIVERS.

Nearly all the rivers are navigable for small craft up to the mountain ranges and many for a much greater distance. The sand bars at their mouths render them, in nearly all cases, inaccessible for shipping. The Betsiboka River on the west coast and its tributary, the Ikopa, on which rivers lie some of the finest rice fields in the world, are navigable for dhows and small schooners as far up as Maevatanana (in the rainy season), and from thence to Suberbieville, some 5 miles up the Ikopa River. Until recently I have been informed, a 60-horsepower steamer and two schooners plied regularly between Majoriga and Suberbieville. It is asserted that these rivers are navigable for small boats to within four days foot travel of the capital, Antananarivo, thus making them navigable for, say, 180 miles.

OCEAN LINES.

There are two steamship lines which have practically become identified, to some extent, with Madagascan commerce, and are therefore entitled to especial mention.

The Castle Line.—The intermediate steamers of the Castle Line of mail packets, also called the Donald Currie line, touch at Tamatave from Natal every four weeks. These boats call at Fort Dauphin, Mananjara, Mahanora, and Tamatave, and thence proceed to Port Louis, Mauritius, returning from there direct to Natal, after a ten days' trip, unless sufficient freight or passage returns offer on the Madagascan coast to warrant their calling for same en route to Natal.

The fleet and tonnage of this line usually placed on the Natal-Mauritius run comprise the *Pembroke Castle*, 3,878 tons; *Downe Castle*, 2,957 tons; *Methven Castle*, 2,605 tons; *Dunbar Castle*, 2,608 tons; and *Warwick Castle*, 3,056 tons.

The agents of this line in Madagascar are either loath or unable to give any definite information concerning it. The general condition of the line is good, and it is being constantly bettered both as to equipment and service. The passenger tariff to London is \$262.50, first class; \$183.75, second class, and \$131.25, third class. Intermediate tariffs I have been unable to secure. The freight rates are from \$7 to \$10 per ton to London and \$15 to \$20 per ton of 2,000 pounds to Boston or New York. There is no freight traffic between Madagascar and South Africa, therefore no rates can be given. Freight charges between coast ports vary, ranging from \$5 per ton upward.

This line is a private English corporation engaged principally in the South African colonial trade, the Madagascar-Mauritius branch being, therefore, practically a subsidiary line. The parent line, including these intermediate steamers, receives a certain subsidy from the British Government for mail service to South Africa. I have been unable to learn what arrangement they have for Madagascar and Mauritius.

The Messageries Maritimes Company.—The regular mail steamers of the Oriental-African coast line of the Messageries Maritimes Company, of Marseilles, France, call regularly at Tamatave about the 6th or 7th of each month, en route from France to Mauritius, via Nossi-Bi, Diego Laurez, and Sainte Marie. At Nossi Bi they connect with the auxiliary steamer, *Mpaujaka*, from and for Nossy Vey, Morondava, Mainterano, and Majouga. Also, about the 26th of each month, the steamer of the second month preceding returns, en route for Marseilles, via the same ports, and making connections with the *Mpaujaka* at Nossi-Bi for the same ports on the west coast of Madagascar, thus giving both the east and west coasts a semimonthly service for mails, passengers, and freight. Another auxiliary steamer, plying between Mauritius, Reunion, and Mahe, makes connection at the latter place with outward and homeward mail steamers on the Australian and New Caledonian line of the

same company in such a manner as to enable a transfer of mail and passengers to and from Madagascar and intermediate points.

The following tables, A, B, C, and D, give all needed information as to distances and freight and passenger rates, and may be considered reliable.¹

TABLE A.—Distances on Oriental-African coast line (*Messageries Maritimes Company*).

[In miles of 1,852 French meters; 1 = 1.15 English miles.]

From—	To—											
	Port Said.	Suez.	Obock.	Aden.	Zanzibar.	Mayotte.	Nossi Bi.	Diego Saurez.	Sainte Marie.	Tamatave.	Reunion.	Mauritius.
Marseilles	1,503	1,590	2,850	2,970	4,745	5,305	5,480	5,653	5,993	6,077	6,443	6,598
Port Said	87	1,347	1,467	3,242	3,802	3,977	4,150	4,490	4,574	4,940	5,095
Suez	1,290	1,380	3,155	3,715	3,890	4,063	4,403	4,487	4,853	4,978
Obock	120	1,895	2,455	2,630	2,803	3,143	3,227	3,593	3,718
Aden	1,775	2,335	2,510	2,683	3,023	3,107	3,473	3,598
Zanzibar	560	735	908	1,248	1,332	1,703	1,823
Mayotte	175	348	688	772	1,143	1,263
Nossi Bi	173	513	597	968	1,088
Diego Saurez	340	424	795	915
Sainte Marie	84	453	573
Tamatave	371	491
Reunion	136

¹During the present Franco-Malagasy war, the Tamatave service has been slightly changed. The outward mail goes from Mayotte to Majonga, Nossi Bé, Diego Saurez, Tamatave, Reunion, and Mauritius, reaching Tamatave the 8th or 9th of each month. These boats do not call at Aden; and the Mahe-Reunion-Mauritius auxiliary has been abandoned, while a new auxiliary, *The Amazone*, plies on a special service, on arrival of the mail from France, from Majonga to Mahe (via Nossi Bé, Diego Saurez, and Reunion), where it connects with the Australian mail from Europe. This gives the east coast below Diego Saurez but one mail a month instead of two, as formerly.

TABLE B.—Showing passenger rates to and from Marseilles, Messageries Maritime line.

From—	To—											
	Port Said.	Suez.	Obock.	Aden.	Zanzibar.	Mayotte.	Nossi Bi.	Diego Suarez.	Sainte Marie.	Tamatave.	Reunion.	Mauritina.
Marseilles:												
First class.....	\$80	\$90	\$170	\$175	\$220	\$228	\$236	\$240	\$245	\$245	\$250	\$250
Second class.....	60	68	113	116	160	166	172	175	180	183	190	190
Third class.....	30	34	62	64	80	83	86	88	90	92	95	95
Port Said:												
First class.....		12	110	160	190	205	210	216	216	240	240	240
Second class.....		9	85	85	135	140	147	150	155	158	165	165
Third class.....		6	42	42	68	70	74	75	78	79	83	83
Suez:												
First class.....			100	100	150	180	195	200	206	206	230	230
Second class.....			77	77	127	132	140	142	147	150	157	157
Third class.....			38	38	64	66	70	71	74	75	79	79
Obock:												
First class.....				10	100	120	140	150	160	165	180	180
Second class.....				7	70	90	106	112	140	124	135	135
Third class.....				4	35	45	52	56	60	62	68	68
Aden:												
First class.....					100	120	140	150	160	165	180	180
Second class.....					70	90	105	112	140	124	135	135
Third class.....					35	45	52	56	60	62	68	68
Zanzibar:												
First class.....						60	75	90	110	116	140	150
Second class.....						45	56	67	82	87	105	111
Third class.....						23	28	34	41	44	53	56
Mayotte:												
First class.....							14	28	46	50	72	80
Second class.....							11	22	34	38	54	60
Third class.....							6	11	17	19	27	30
Nossi Bi:												
First class.....								14	34	40	64	72
Second class.....								11	25	30	48	54
Third class.....								6	18	15	24	27
Diego Suarez:												
First class.....									20	28	52	60
Second class.....									15	21	38	45
Third class.....									8	11	19	23
Sainte Marie:												
First class.....										8	30	38
Second class.....										6	23	29
Third class.....										3	11	14
Tamatave:												
First class.....											24	32
Second class.....											18	24
Third class.....											9	12
Reunion:												
First class.....												13
Second class.....												10
Third class.....												5

NOTE.—Deck passage is sold between points at about one-quarter first-class fare. First and second class railway tickets are sold passengers of such grades on board prior to arrival at Port Said for \$25 and \$20 to London, England. \$1 = 96 cents United States gold.

TABLE C.—Showing freight rates per 1,000 kilograms on same line.

From—	To—		
	Marseilles.	London.	New York or Boston.
Tamatave.....	\$12.00 to \$16.02½	\$13.00 to \$17.50	\$21.40 to \$29.22½

NOTE.—Freight rates between local points are variable. These steamers, because of their Government subsidy and passenger traffic, do not seek for local freights, but only through freights. Agents here claim inability to quote freight rates from other points than Tamatave.

TABLE D.—Names and size of vessels on same line.

Name.	Tonnage.	Horse power.	Name.	Tonnage.	Horse power.
Sindh	3,373	2,900	Traonady	3,785	2,900
Ava	3,361	2,400	Djemnah	3,785	2,900
Amazone	3,350	2,400	Mpanjaka	684	450
Pei Ho	3,392	2,400			

^a This vessel plies down the west coast of Madagascar only. Has first-class and deck accommodations for passengers only.

Rates of passage between ports on west coast of Madagascar.

From—	To—			
	Majonga.	Main-terano.	Morondava.	Nossy Vey.
Nossi Bé:				
First class	\$20	\$40	\$50	\$70
Deck	5	10	13	17
Majonga:				
First class		20	32	50
Deck		5	8	13
Mainterano:				
First class			12	30
Deck			3	8
Marondava:				
First class				20
Deck				5

The Messageries Maritimes is the great commercial maritime company of France, and is, I understand, heavily subsidized by the French Government. In truth, one is always surprised on boarding the steamers of this company at their small cargo capacity compared with their size. It is claimed, however, that under their subsidy a certain proportion of their lower hold must be used for storage of munitions and material wherewith to transfer the harmless merchant steamer into an effectively armed one in case of war. It is further claimed that this is not only the case upon this branch, but upon all its branches.

The condition of this particular branch, the Oriental African Coast line, is good, although lately considerable complaint is heard, both as to the equipment and the service, the claim being made that the company is spending all its money in improving the Australian-New Caledonian line and neglecting this branch.

Austrian Lloyd.—The Austrian Lloyd steamers, plying between the Black Sea and Mozambique and Natal, make monthly calls at Nossi Bé, freights and passenger receipts warranting. Of this line I can secure no details. I hear it has been months since they last put into Nossi Bé.

Havre Peninsular Line.—The freight boats of the Havre Peninsular Line of French steamers make monthly calls at Nossi Bé, Diego Suarez, Sainte Marie, and Tamatave, proceeding from Tamatave to Mauritius, via Reunion, but they never return this way homeward. They are commonly known as the "Ville boats," being all named after cities. It is difficult to secure any information either as to their size or rates on freight and passage (their passenger capacities are usually very limited), owing to the lack of interest the local agents here exhibit.

These, with an erratic fleet of small sailing vessels, owned by merchants here, and a "tramp" ship, or steamer, cover the ocean traffic of this great African island.

In conclusion I would state that this report has lain for months, roughly drafted, upon my desk, awaiting missing information from the Castle and Havre lines' agents. Repeated requests have been made and innumerable promises given that it would be immediately forthcoming, but as yet without result.

In the interim an American line of steamers, chartered by New York brokerage firms, has begun to make regular trips to this country, via Cape Town and South African ports, but as yet it can scarcely be considered a regular line.

EDW. TELFAIR WETTER,
Acting Consul.

TAMATAVE, *April 15, 1895.*

MAURITIUS.¹

RAILWAYS.

The Colonial Government of Mauritius owns and controls the various railway lines of the island, which are under the management of a general superintendent. The system consists of two main lines—the North and the Midland—having a common terminus in Port Louis and three branch lines connecting with the main lines at intermediate stations.

The Moka branch, 16 miles in length, begins at Rose Hill station, on the Midland line, and runs through the districts of Plaines Wilhems, Moka, and Flacq, to Montagne Blanche. The running gradient on this line is 1 in 40. The two principal bridges on this branch are built of masonry, viz, the bridge over the River Plaines Wilhems, with two semicircular arches of 50 feet span, and a height of 30 feet above the river bed; and the Redit viaduct, over the River Cascade, with three arches, the central one of 70 feet span, with a rise of 27 feet, and the two side ones semicircular, of 50 feet span. The rail level on this viaduct is 80 feet above the bed of the river.

The Savanne branch, 11 miles long, begins also on the Midland line, at Rose Belle station, and runs through the district of Grand Port and Savanne, to Souillac. The ruling gradient is 1 in 40. The principal bridge is the viaduct over the River des Anguilles, of three spans, two of 70 feet and a central one of 85 feet, with iron girders, supported on masonry piers. The rail level on this viaduct is 105 feet above the bed of the river.

¹ Consul Campbell states that the delay in forwarding his report was due to the nonreceipt of the Department's first instructions on the subject.

The total length of the Midland line is about 36 miles. It traverses the center of the island, running through the districts of Port Louis, Plaines Wilhems, and Grand Port, to Mahebourg. The highest level above the sea, 1,828 feet, is attained between the stations of Curepipe and Forest Side. The gradients on this line are unusually great, 1 in 27 occurring repeatedly.

The principal bridges (wrought-iron girders) are the bridges over the River St. Louis, with one span of 90 feet and a height of 25 feet; the viaduct over Grande River, in five spans of 126 feet each, supported on cast-iron columns filled with concrete, and having a height of 140 feet above the bed of the river. There is also the viaduct over the River La Choux, of three spans, two of 75 feet and one of 58 feet. A line to the district of Black River is in contemplation.

The North line, about 31 miles in length, runs through the districts of Port Louis, Pamplemousses, Riviere du Rempart, and Flacq to Grand River. It was the first open to traffic in May, 1864. The principal bridge on this line is an iron viaduct over the "Iron Fanfaron," composed of 16 spans of 36 feet each, supported on cast-iron screw piles filled with concrete, and built on a curve of 2,000 feet radius. The maximum gradient on this line is 1 in 80, and the highest point attained is 329 feet above the level of the sea. The tracks are generally single, and are what are called in the United States broad gauge.

Tariffs.—On the Midland line, from one terminus to the other, that is, from Port Louis to Mahebourg (36 miles) first-class passengers pay 4.32 rupees¹ (about \$2.16); second class, 2.88 rupees (\$1.44); third class, 1.44 rupees (72 cents).

The intermediate tariffs are comparatively a little in excess of the through tickets. For example, Curepipe is considered halfway between Port Louis and Mahebourg, and the first-class fare to that point is 192 cents; second class, 128 cents, and third class, 64 cents of the rupee. Shorter distances are charged for proportionally.

Tariffs on the North line from Port Louis to Grand River (31 miles) are: For first class, 3.72 rupees; second class, 2.48 rupees; third class, 1.44 rupees.

Contract tickets are issued on these lines good for one month, three months, six months, and one year at considerably reduced rates. The communication between intermediate stations from Port Louis to Curepipe is frequent. During the early morning and from 3 p. m. to 6 p. m. trains are run frequently, owing to the fact that all the Government employees and everyone else who can afford it reside in the mountainous parts of the island in order to escape the fevers of this unhealthy town. There is only one through train daily on each line.

Freight rates for parcels, from any station irrespective of distance, are as follows: Not exceeding 15 kilograms (31.07 pounds), 0.25 rupee; not

¹ It will be seen that the consul estimates the rupee at 50 cents in his reductions.

exceeding 50 kilograms (110.23 pounds), 0.50 rupee; not exceeding 75 kilograms (165.34 pounds), 0.75 rupee; not exceeding 100 kilograms (220.046 pounds) 1 rupee.

Merchandise is classed under five heads—first, second, third, fourth, and fifth. Under the head of first the rate from Port Louis to Mohebourg is 3.82 rupees; second, 5.89 rupees; third, 7.69 rupees; fourth, 9.39 rupees; fifth, 10.21 rupees. Special rates are given for sugar and provisions. The term provisions, for which special rates are made to some stations, is to include all articles, except machinery, furniture, and dangerous goods, carried from Port Louis to the estates of planters whose sugar is brought to Port Louis by railway, provided they are sent in lots of not less than 3 tons, otherwise they will be chargeable according to this classification; provisions for storekeepers and others not sending sugar may also be carried at special rates when sent in full wagonloads of 3 tons and upward, but in this latter case the term is only to include grain, salt fish, salt, rum, vin ordinaire, and oil—small quantities being chargeable according to classification.

The railway debts stood as follows on December 31, 1885:

Name of railway and character of indebtedness.	Pounds sterling.	Equivalent in United States money.
Mauritius Railway debentures, payable February 15 of this year (1896), and January 15, 1896.	240,000	\$1,167,840
Savanne Railway, 4½ per cent, payable by annual drawings in and from 1881 to January, 1896	95,800	466,163
Moka Railway, 4½ per cent, payable by annual drawings in and from 1884 to 1896	104,000	508,064
Consolidated, 4 per cent, payable by annual drawings from 1882 to 1896	302,800	1,473,425
Total	742,600	3,613,492

OCEAN LINES.

The harbor of Port Louis is considered one of the safest and best in these latitudes. It can accommodate about 200 vessels of a tonnage ranging from 100 to 6,000 and upward. The port has three dry docks of 318, 320, and 377 feet capacity. The patent slip can only receive vessels of about 300 tons register.

Steamers of the Messageries Maritimes Line communicate with this port twice a month. They run from Marseilles to Mahe (Seychelles), taking passengers and mail. Other steamers of the line, homeward and outward bound, for Europe and Australasia, call to take passengers and mail to and from this island. Another steamer of this line leaves on the 23d of each month for Reunion, Madagascar ports, and Zanzibar, and through the Suez Canal for Marseilles.

The British India Steam Navigation Company, Limited, has a steamer touch here, at somewhat irregular dates, which takes passengers, etc., to Australia and Europe, via Colombo.

The Castle Line Packet Company dispatch a steamer once a month for Natal, Cape Town, and England. These boats carry freight chiefly, but passengers are also booked.

HIGHWAYS.

The width of the highways in the country districts of Mauritius ranges from 20 to 25 feet, while those in Port Louis vary from 12 to 20 feet.

JOHN P. CAMPBELL,
Consul.

PORT LOUIS, April 18, 1895.

MOZAMBIQUE.

OCEAN LINES.

The principal highway of commerce of this province is the Indian Ocean, or rather, that part of it known as the Mozambique Channel.

German East African Line.—The ocean line enjoying the greatest amount of traffic in these waters at present is the Deutchen Ost Afrika Linie (German East Africa Line), owned and operated by the company bearing the same name. The steamers of this line sail from Hamburg every four weeks and call at Amsterdam, Lisbon, Naples, Port Said, Suez, Aden, Tanga, Dar es Salaam, Zanzibar, Beira, Lorenzo Marquez, and Durban, the last-named port being the terminus of the line. A coasting steamer of this line sails between Mozambique, Parapat (Antonio Ennis), Kiliman, Chinde, Beira, and Inhambane. The total length of the voyage from Hamburg to Mozambique is 8,040 nautical miles. The coast distances from Mozambique are as follows:

To—	Miles.	To—	Miles.
Parapat	95	Inhambane	790
Kiliman	315	Lorenzo Marquez	940
Chinde	385	Durban	1,260
Beira	485		

The company's fleet consists of three single-screw steamers of 3,000 tons each, able to steam about 12 knots; two of 2,600 tons each, steaming about 10 knots; one of 1,150 tons, one of 1,400 tons, and two of 600 tons each. The last four are rather slow boats and are employed in the coasting and India trade. The three largest vessels carry on the regular service from Hamburg, as do also the two next in size, but the latter are also going to run alternately occasional trips via the West Coast and the Cape of Good Hope.

The accommodations for passengers on these steamers are excellent, but the food provided is a little too heavy and rich for a tropical climate.

First-class passenger fare is as follows:

From—	To—	Fare.	From—	To—	Fare.
Hamburg	Mozambique	\$200	Mozambique	Lorenzo Marquez	\$44
Do	Beira	212	Do	Durban	72
Do	Lorenzo Marquez and Durban	225	Beira	Lorenzo Marquez and Durban	40
Mozambique	Beira	37			

The charge for first-class freight from Hamburg to Mozambique and other coast ports is \$10 per ton. The charge on the same freight from Hamburg to Delagoa Bay (Lorenzo Marquez) and Durban is but \$7.50 per ton. The freight charges on produce from the east coast to Naples, Lisbon, Rotterdam, Marseilles, Bremen, and Hamburg are from \$10 to \$20 per ton.

Union Steamship Company.—The steamers owned and operated by the Union Steamship Company, Limited, of London, are the largest doing business on this coast. A steamer sails from London, via Lisbon, Madeira, and Cape of Good Hope ports, to the various ports of this province every four weeks, and is under a contract with the Portuguese Government to carry the Portuguese mails. These steamers go as far north as Zanzibar, where they connect with vessels of the British India Company, afterwards returning by the same route, a voyage of nearly 20,000 nautical miles, as shown by the following table:

From—	To—	Miles.	From—	To—	Miles.
London	Lisbon	1,000	Lisbon.....	Beira.....	6,768
Lisbon.....	Madeira.....	515	Do.....	Kiliman.....	6,935
Do.....	Cape Town.....	5,188	Do.....	Mozambique.....	7,235
Do.....	Lorenzo Marquez.....	6,300	Do.....	Zanzibar.....	7,805
Do.....	Inhambane.....	6,530			

This company has an extensive fleet, but only the following vessels are employed in this trade, viz:

Name.	Propulsion.	Tons.	Horse-power.
Gaul	Twin screw.....	4,744	2,000
Greek.....	do.....	4,338	2,000
Goth.....	do.....	4,820	2,000
Trojan.....	Singlescrew.....	3,741	4,100
Spartan.....	do.....	3,403	4,100
Pretoria.....	do.....	3,198	3,650
Arab.....	do.....	3,192	3,600
German.....	do.....	3,007	2,650
Anglian.....	do.....	2,158	1,700
Saxon.....	do.....	462	500
Two tenders.....	do.....	100	200-300

These vessels, with the possible exception of the *Saxon*, are first class in every respect. On board of them the traveler will find every comfort and many luxuries. Iron berths, with woven wire mattresses, and patent lavatories, are in many of the cabins and staterooms, and nearly all are lighted throughout by electricity.

In many of these steamers the second-class accommodation is practically equal to the first class of many of the Atlantic liners, the cabins being large, light, and well-fitted, and the meals and attendance good.

First-class passenger fares from Mozambique are as follows:

To—	Fare.	To—	Fare.
Zanzibar.....	\$34.00	Lorenzo Marquez.....	\$53.50
Kiliman.....	19.50	Durban.....	63.00
Chinde and Beira.....	34.00	Cape Town.....	106.00
Inhambane.....	44.00	London.....	225.00

By agreement with the Portuguese Government a special rate is given to Lisbon.

First-class freights per ton, including landing charges, from Mozambique are as follows:

To—	Rate.	To—	Rate.
Killiman and Chinde.....	\$8.40	Durban.....	\$10.80
Beira.....	9.75	Cape Town.....	a 12.60
Inhambane.....	10.20	London.....	a 21.40
Lorenzo Marquez.....	11.40		

a For produce.

The agent in Mozambique for this line has no quotations of first-class freight charges to the two last-named ports.

Castle Line.—A steamer of a little over 1,000 tons, belonging to the Castle Steamship Line, owned and operated by Donald Currie & Co., London, sails from Durban with passengers and cargo every two weeks for Lorenzo Marquez, Inhambane, and Beira.

Other lines.—Four other steamship lines, carrying both passengers and freight, send steamers from English ports to this coast, via the Cape, at irregular intervals.

Clan Line.—The Clan Line, of Liverpool, which devotes its vessels almost exclusively to freight traffic, has a number of steamers engaged in the trade between New York and south Africa. These steamers sail from New York monthly, as a general rule, and call at Lorenzo Marquez and, when they have sufficient freight, at the other ports in this province also. After discharging their cargo here, they do not return to New York, but go east and generally load in India for some English port.

RAILWAYS.

Delagoa Bay Railway.—This road (Caminho de Ferro Portuguez de Lourenço Marques ao Transvaal), owned and operated by the Portuguese Government, is a narrow-gauge line (3 feet 6 inches), 56 miles in length, running between Lorenzo Marquez and Ressano Garcia, on the Transvaal frontier, beyond which it is continued by the line of the Netherlands Railway Company, which line is now nearly completed to Pretoria, the capital, and Johannesburg, the great mining town of the South African Republic. The line (single track) is in fairly good condition, but better accommodations for freight, more sheds in the Lorenzo Marquez yard, and more rolling stock are needed. The rolling stock at present consists of 11 locomotives, 16 passenger cars, and 161 freight and ballast cars, and all could be improved upon. The freight rates between terminals average about \$3.50 per ton, and passenger rates, first class, about 3½ cents per mile.

When the Transvaal extension of this line is completed, which will be about the end of the year, low through rates for both passengers

and freight will be quoted from Lorenzo Marquez to Johannesburg and Pretoria.

The history of this line dates from December 14, 1883, when Col. Edward McMurdo, an American engineer, secured a concession from the Portuguese Government for the construction of the railway. An English syndicate afterwards took over the concession and had almost finished the line when the time for completion under the concession expired. Subsequently, on the 25th of June, 1889, a decree was signed in Lisbon canceling the concession and declaring the line forfeited to the Portuguese Government, failure of contract being the reason given for such proceedings, and on the 29th of the same month the Portuguese authorities in Lorenzo Marquez took forcible possession of the line, completed it later on, and have held and operated it ever since. No doubt the malignant form of fever that was prevalent in the districts traversed by this line was one of the principal causes for the delays in its construction, as it was impossible to keep a full force of men at work. Thousands, black and white, died while the work was being carried on, and were buried almost where they fell. The total number of deaths among the employees during the construction of this line will probably never be known. Had the contractors published the number of deaths probable that they would have been unable to obtain men.

the Beira Railway.—This road is not yet out of the hands of the contractors, who, when the line is finished, will turn it over to the Beira Railway Company. This railway is being built with the object of connecting Beira on the coast with Manicaland and Mashonaland, countries that are reported to be rich in gold. It starts from Fontesvilla, 45 miles from Beira, up the Pungwe River, and at present is open for traffic over a distance of 75 miles, and work on the next extension, 44 miles in length, to a place called Chimoio, is now progressing at a fair rate. The present line is being constructed on a 2-foot gauge, with the intention of widening it to 3.6 feet later on, and the equipment and rolling stock is neither extensive nor elegant, simply serviceable. The roadbed for the line from Fontesvilla is nothing more nor less than black mud with a little ballast, and during the last rainy season many miles of the line were under water. Now the work of raising the level of the line by the addition of more ballast of earth and stone is progressing at a favorable rate. Derailments occasionally occur on the line, and only a few trains run at a low speed, and the cars are all open, no one is allowed to take passengers and freight from Fontesvilla to Chimoio on an average.

Communication by river traffic from Beira to Fontesvilla is performed by the Beira and Shipping Company, who run light-draft river steamers between the two towns several times a week. Passenger fares on the river are \$1.25 for the trip; freight, \$5 per ton. The fare for the road from Fontesvilla to the present terminus is but a few

Almost all passengers by these lines are bound for the gold fields, and their steamer and car fares are but small items in their expenses for the trip. It is possible to travel from Beira to Salisbury for \$50, but it can be done with more comfort for \$75 or \$100.

Through freight rates from Beira to Salisbury, via river, railroad, and ox wagon or porters, are now quoted at from \$75 to \$90 per ton, but as the railroad is extended the rates will drop.

RIVER NAVIGATION.

On the Zambesi River and its tributaries several firms and individuals run light-draft steamers, carrying both passengers and freight. These boats are fairly comfortable, but the traveler who intends going up the Zambesi must be prepared not only to suffer physical discomforts but run the risk of contracting the fevers which often affect Europeans coming to this section.

Passenger fares by these steamers from Chinde to the Shire River are from \$75 to \$100. The traveler who intends going to Lakes Nyassa or Tanganyika must be prepared to pay from \$250 to \$400 for his traveling expenses. Freights by these steamers vary and are more a matter of arrangement than anything else. Many of the leading corporations in the river and lake districts have their own steamers and lighters for the transportation of their goods. The average charge for 1 ton of freight from Chinde to the border of British central Africa on the Shire River is \$100, beyond which point it rises rapidly and 1 ton of freight can not be sent from Chinde to Lake Tanganyika for less than \$300.

As these districts are opened up and trade increases, freight rates must gradually decrease and finally reach a reasonable figure.

W. STANLEY HOLLIS,
Consul.

MOZAMBIQUE, *January 1, 1894.*

THE PORT OF BEIRA.¹

The transit trade of Beira has increased in consequence of the opening of 75 miles of railway from Fontesvilla inland. As there exists a very bad fly patch just beyond 75-mile camp there has not been such an increase in transit trade as might have been expected. The uncertainty which existed at the beginning of 1894 about the railway extension, and the irregularity of native and ox-wagon transport, made merchants very chary of importing through Beira large quantities of goods.

There is no doubt that the district could produce a great deal more than it has done. The rivers which intersect it afford a cheap means

¹ Extracts from the annual report of the British consul at Beira, October 7, 1894.

of transport to the place of export. The native population is very sparse, and, further, the natives are said to be very lazy, and are not yet accustomed to the security from pillage guaranteed to them by Government. They prefer to remain poor, to becoming, in consequence of possessing some property, the objects of envy to stronger neighbors.

The experience of the past two and one-half years has gone to confirm what is the general opinion of the trade of Beira, and that is that will consist of the forwarding of goods to the Manica gold fields and Mashonaland. During 1892 goods were ordered in the hope of the local trade growing. This hope has not been realized during 1893 and '4, and merchants are now averse to importing large stocks.

There are no new branches of trade. Under the present fiscal system, until the completion of the railway to Chimoio, there will be no development of forwarding (the principal business). There are already more storekeepers in the town of Beira than the trade warrants.

All possible facilities are given by the Mozambique Company after duties and taxes have been paid. Most reasonable allowances are made for delays in passing transit goods through the frontier station. Merchants transporting transit goods across the company's territory, if permitted to make use of them within that territory, are allowed to pay duty on such goods at Massikessi in place of being taken up for doing so elsewhere. Goods intended for British territory are passed in transit, with security being given by the owner, who obligates himself to deliver the goods at the frontier fiscal station at Massikessi within a month from the date of clearing at Beira. Goods in transit may be stored in the custom-house stores for 1 shilling per ton per month, or in private bonded warehouses. When owners of transit cargo so wish they are not required to land it in Beira. They may clear on shore and have goods taken up-country direct from the ship's side. The principal custom-house is that of Beira, but goods may also be cleared at Senna, on the Zambesi, or at the port of Chiloane, a little distance from Beira. During 1893 the imports and exports through Senna amounted to £7,200; through Chiloane to £3,100.

In 1893-94 the Union Steamship Company's steamers called once a month on the way to and from Zanzibar; the Castle Line Company maintained a fortnightly service with Durban; the South African Company's vessels touched at Beira twice a month to and from Durban; J. Y. Rennie & Son's steamers called every three weeks, and steamers of the British Colonial Navigation Company, and of Bullard King called occasionally. The service is more than sufficient for the trade of the place. The harbor is well buoyed and the buoys are well marked so that complete reliance may be put in them by vessels on their first time. Nothing of importance has been done toward the improvement of the harbor. Each of the towers on Points Jea and Chiveve is visible, but these are not visible at any great distance. A new

chart of the entrance channel was published early in 1894, giving the latest soundings. The least water on the bar has been 11 feet at low water, spring tide, the most, 29 feet at high water, spring tides. The vessel of the deepest draft entering the port has been H. M. S. *Magicienne*, drawing probably 23 feet. There is a good anchorage, with a minimum depth of 5 fathoms.

The present dues are slightly altered from those in force in 1893. The old dues were as follows: For steamers, 4½d. per ton of cargo landed or loaded, 1s. 2½d. per passenger or head of cattle landed or loaded. For sailing vessels, 7½d. per ton of cargo landed or loaded, and for both a clearance fee of about 38s., besides cost of guards on board at 1s. 7d. each per day. In August, 1894, it was decreed that on account of the improvements made in connection with the port (1) dues of 4½d. per ton should be paid on every ton of cargo landed or loaded, not only up to 100 tons; (2) the same amount to be paid on every ton of cargo transshipped in the port, and (3) every vessel coming from other ports should pay the sum of £5.

In June, 1884, the Mozambique Company built a substantial wooden landing stage, connected with the custom-house. It measures 293 feet in length by 82 feet in breadth. There is one 30-hundredweight crane on it, and two larger ones are shortly to be put into position. Rails run from the crane into the custom-house stores. As the staging does not project into deep water, goods have to be taken to and brought from vessels in lighters.

For the use of the staging and crane the Mozambique Company makes the following charges:

Class.	Charges.	Class.	Charges.
	<i>s. d.</i>		<i>s. d.</i>
Goods weighing over 10 hundredweight, per ton.....	1 7	Baggage, per package.....	0 2
Goods weighing under 10 hundredweight, per ton.....	0 9½	Cattle, horses, and donkeys, each.....	0 9½
		Goats, pigs, and sheep, each.....	0 4½

The landing plant of the port includes 15 lighters, with a total capacity of 350 tons; 2 steam tugs, and 3 steam launches. Sixty-one sailing launches hold licenses from the Mozambique Company to carry goods and passengers to and from the various ports of the company's territory. The lighters and steam launches above referred to are used to carry cargo and passengers between Beira and Fontesvilla. With the present plant, the landing company can contract to land at Fontesvilla 100 tons per day, taking the cargo from a vessel in Beira. A steam tug leaves Beira for Fontesvilla several times a week, and usually on the arrival of passengers by any ocean steamer.

The journey to Fontesvilla by steamer occupies about four hours, and the rates are from 15s. to £1 5s. for each passenger, and 15s. to £1 per ton of cargo. The sailing launches maintain communication

between Beira, the Busi River, Chiloane, Sofala, and the Sabi River, as well as going up and down the Pangwe. The landing company can load or discharge 250 tons every twenty-four hours. At Fontesvilla a steam crane is used to discharge lighters. Landing charges are 10 shillings per ton.

There is practically no freight going homeward. The rates of outward freight depend very much upon arrangement, and vary according to circumstances.

It is intended to place on the Point Jea tower a light visible 12 or 14 miles away, to enable vessels to pick up the port at night. The present light on that tower is of little use, while that on the Chiveve tower only serves to show the anchorage to boats coming in at night. In 1893, a railway of narrow gauge was laid from Fontesvilla for a distance of 75 miles, and during the present year this line is being extended to Chimoio, a distance of 42 miles. This will bridge the gulf, and there should then be no difficulty in conveying goods and machinery to Mashonaland and the Manica gold fields. This line has at present a capacity of 60 tons per day. If trade increased, by an augmentation of rolling stock the maximum capacity of the line could be increased to 300 tons per day. The line is therefore more than sufficient for all demands that are likely to be made on it for some years to come.

There are no roads, canals, or bridges of importance in the district. The telegraph line accompanies the railway from Fontesvilla onward. Unfortunately there is no connection with Beira, so that the portion of the telegraph line already in position is practically useful only to the railway company. There is no doubt that were the wire carried from Fontesvilla to Beira, and from Fontesvilla to join the British South Africa Company's system, it would be a great boon to trade.

The most important line of communication is that leading toward Mozambique. The present rates for passengers on this line and the charges applied on the journey are given below:

Stations.	Time.	Passengers.	Goods per ton.
		£ s. d.	£ s. d.
Fontesvilla by steamer.....	Four hours.....	1 5 0	1 0 0
75 miles.....	Ten hours.....	2 0 0	3 15 0
Chimoio.....	Two days on foot, or by wagon, three days.	.....	12 10 0
Lisbury.....	Passengers, four days; goods, two to three weeks.	9 0 0	15 0 0

SOMALI COAST (BRITISH.)¹

The Somali Coast Protectorate extends from Lahadu (or Lewadu), which is halfway between Jibuti and Zaila, to the forty-ninth parallel of east longitude. Treaties have been concluded with all the coast tribes, and also with the Gadabursi tribe, which formerly extended to the seacoast. The whole of the protectorate is inhabited by various Somali tribes, split up into numerous subtribes and clans.

The whole of the carrying work of the country is by camels, supplemented, to a small degree, by stout donkeys. Porters are unknown. Trade caravans, that is, not those of persons simply going to their encampments, are escorted by armed attendants supplied by the political agency.

Transit dues are levied by some tribes, and give rise to disputes and troubles. It is to be hoped that they may be abolished before long.

On the coast the currency is the Indian rupee and small silver coinage. In the interior much is done by barter. At Harrar the rupee is not current; the Maria Theresa dollar is in favor there, but small Indian coins (2-anna and 4-anna pieces—especially the former) have at times been in great demand.

At the ports of Zaila, Bulhar, and Berbera British officers are stationed to administer the law, civil and criminal, and collect the customs dues. There is practically no interference with the people outside the ports as long as trade caravans are unmolested; but the officers frequently act as mediators and thus keep the peace. There are also "kazis," or native judges, who perform marriages and such rites, and decide religious matters. As the people are altogether Mohammedans, the social customs are governed by the tenets of this religion in a great measure, and thus the "kazis's" jurisdiction is essential. Disputes are often referred to "punchayets," or arbitrators. Most of the tribes with which the agency has to deal have "akils," or wise men, who receive small stipends from the Government. They act as go-betweens with their several tribes, and as the tribes' agents and representatives with the Government officials.

The ports of the protectorate are known as customs ports and flag ports. The former are Zaila, Bulhar, Berbera, and Karam; the latter are Ainterad, Ankor, Raguda, Shellao, Hais, Mait, and Haschow. At the customs ports (except Karam), British officers are stationed and customs duties are levied; these, in fact, forming almost the entire revenue of the ports. Karam's revenue is so small that it can not support an establishment, and the duties are levied at Aden on exports from and imports to that port. Berbera is the only real harbor within the protectorate, and is the chief center of trade. It is necessary to mention

¹Extracts from report of Lieutenant-Colonel Stace to British foreign office for the year 1891-92.

Aden [Arabia], because Somaliland is dependent on this place in the matter of trade, in the same way that Aden is to a very great extent dependent on Somaliland for its meat supply. Aden was famous, it is said, in the olden days as an emporium. The trade has developed since its occupation by the British in 1839, until last year the value of the trade reached over £7,000,000 (£1=10 rupees), excluding Government treasure and stores and all goods manifested for direct transshipment though landed. Aden produces nothing. The consumption of merchandise is, of course, comparatively small, with a population of only about 40,000 people, the majority very poor; but it is the great distributing center for the Gulf of Aden, including the south Arabian ports, in a great measure for the east coast of Africa, and for various ports of the Red Sea. The produce of the Somali Protectorate must come to Aden, and, on the other hand, all the requirements of the Somali Coast are distributed from Aden, which is a free port, so far as customs duties are concerned. Careful statistics of the Somali Coast trade are kept in Aden, and also on the Somali Coast, the revenue from the customs ports being that from which the expenses of administration are derived.

The transport of goods and merchandise is carried on by means of all local steamers, and also by means of native craft called baggalas or dhows. There are at present two steamers running to and from the Somali Coast, one belonging to Cowasju, Dinshaw & Bros., an old firm known in Aden and elsewhere. This firm has now the postal contract for the Somali Coast, with a subsidy from the Government of 1000 rupees per month, and is bound to run a steamer once a week. The other, less regular, belongs to the Perim Coal Company. They are now engaged in competition. Native craft are numerous, but decreasing rapidly since the regular running of the steamers during the last years. During the fine season—the cold weather—the baggalas are constantly running to and fro, but during the monsoon months are unable to cross the gulf.

ROAD IMPROVEMENT.¹

At the close of the official year, or soon after, trade at Jibuti was completely at a standstill. The Franco-African Company had been digging the road, and laid down rails to facilitate the carriage of goods as far as Hyabili, about 5 miles from Jibuti. But the Dunde and Black Esa were opposed to any scheme of wagon traffic between Jibuti and Harrar, fearing that the employment of their camels would be less profitable, so the road work was stopped, but the rails laid to Hyabili were left *statu quo*. The idea appears to be to connect Jibuti with Harrar by a road adapted to wagons drawn by bullocks.

¹ Taken from annual report of British agent at Aden, August 20, 1894.

ZANZIBAR.¹

Exporters from Zanzibar labor under a great disadvantage in the irregularity of communication with Europe. With the exception of an occasional private steamer, which, moreover, is not always in a position to accept extraneous cargo, there are only the three ordinary mail lines by which shipments can be made, the Portuguese mail service to East Africa having now been discontinued for a considerable period. Of these three lines the Messageries Maritimes runs monthly, leaving Zanzibar on the 3d or 4th day of each month, while the boats of the German East Africa and of the British India Steamship companies leave at regular intervals of four weeks, and always within a day or two of each other. It not infrequently happens, therefore, that all these ships leave Zanzibar at approximately the same time, while for the rest of the month there is no communication with Europe whatever, and shippers have been known to prefer sending their goods by the much longer route via the Cape rather than wait weeks for a steamer proceeding directly homeward, with an additional uncertainty as to whether the vessel, if it is one which has called at southern ports on her way to Zanzibar, will not already have taken all the cargo which she is able to carry; and, in the case of the British India Company's steamers, with the added risks of transshipment and delay at Aden. It would be an incalculable boon to the trade of Zanzibar if some arrangement could be effected between the various lines of steamers so that their departure from this port might occur at different and at more or less regular intervals.

Hopes were at one time entertained that a tramway or a narrow-gauge railway line would be laid down through the most cultivated districts, and thus set free for purposes of cultivation many of the domestic classes who are now employed in carrying produce into the town on their heads; but although several firms have opened negotiations on the subject, no definite proposal has yet been submitted for the consideration of the authorities.

There is a slight diminution of both the number and the tonnage of seagoing vessels that have entered this harbor during the twelve months under review as compared with the preceding year, but this is easily accounted for by the fact of the Portuguese line of mail steamers having ceased running. British shipping is still to the fore so far as numbers are concerned, and falls little short of German vessels in the matter of tonnage. It must not be forgotten, however, that the British lines of mail boats make Zanzibar their terminus, whereas both the French and the German lines proceed to ports farther south, and again call at this port on their return journey.

Under the able management of Captain Agnew, R. N. R., port officer to the Government of His Highness the Sultan, in succession to

¹ Extracts from annual report of the British consul at Zanzibar, March 31, 1894.

Commander Hardinge, R. N., the harbor service has been most efficiently carried on, and has in several ways been improved. The port rules and boat tariff have been revised and the different anchorages clearly defined; the shore boats are all registered and numbered and their crews kept under proper supervision; the beach is kept clean and order maintained by an efficient staff of water police; and a slip has been constructed for hauling up small lighters and steam launches. The registration of native canoes has also been taken in hand, and there are now some 160 of these craft on the registers, all of which are licensed and numbered. A most strict control is maintained over dhows (native vessels, of which there are now 414 belonging to this port, representing a tonnage of 9,164 tons and manned by 2,943 men and boys).

The Zanzibar Government is not in a position to do more than keep the present light-houses, which are provided with lights of a very inferior description, in a moderate state of repair. It is much to be regretted that the opposition of one of the treaty powers prevents a tax being imposed on all ships entering this harbor, with a view to maintaining and keeping the light-houses in a thorough and reliable state of efficiency and to effecting other reforms in the service of and the facilities to this harbor.

CAPE COLONY.

OCEAN LINES.

Following lines of ocean travel to this port are all controlled by the following companies: The Castle Steamship Company, from London; the Southamption Steamship Company, from Southampton; the Clan Line Steamship Company, from Glasgow and Liverpool; Bullard, King & Co. Steamship Company, of London, about monthly; Bucknall Bros. Steamship Company, of London, about fortnightly; New Zealand Steamship Company, of London, about fortnightly; Orient Steamship Company, of London, about fortnightly; American and African Steamship Company, from New York, monthly.

Among the above lines, what are commonly known as coast lines, from Port Elizabeth, East London, Durban, and Beira, all on the east coast of the Cape Colony, the Union Line, the Castle Line, and the American and African lines may be reckoned as the chief.

It is impossible to answer the question, "What is the length of the lines and the main points touched?" because there are several main points touched differing with the lines and with special reference to some of the lines. The Castle and Union lines run from Southampton, respectively, as above stated, and touch at the Cape of Good Hope, the Cape of Storms, and St. Helena en route to Cape Town; thence to

Mossel Bay, Kuysna, Port Elizabeth, East London, Durban, Beira, Delagoa Bay, and Mauritius. The distance from London to Cape Town is about 6,000 miles; to Port Elizabeth, about 6,300; to Durban, 7,000, and to Beira, 7,300.

The condition of the Union and Castle lines is excellent, of the American and African Line (being composed of specially chartered ships) varying, but generally good, and of the other lines fair.

There are no river or canal lines in South Africa. The Castle and Union lines have each about fifteen to twenty steamers, ranging from 6,000 tons downward, with horsepower varying from 300 to 10,000. The average speed of boats used for carrying direct mail is 13 to 15 knots per hour. Boats stopping at intermediate points average 12 to 14 knots.

The American and African Company charters steamers direct from New York to this port, arriving here about once a month, distance of 7,000 miles, and freight rates are cheaper than via England by any line.

RAILWAYS.

Generally there is but one track, but on frequently traveled divisions, e. g., Cape Town to Simons Town, there are double tracks most of the way. I give below the distances:

From—	To—	Miles.	From—	To—	Miles.
Cape Town.....	Kimberley	647	Cape Town	Port Elizabeth.....	839
Do.....	Vryburg	774	Port Elizabeth.....	Kimberley	485
Do.....	Johannesburg, South African Republic.	1,014	Do.....	Pretoria.....	740
			Do.....	Vryburg	673
Do.....	Pretoria, South African Republic.	1,040	East London.....	Kimberley	546
			Do.....	Vryburg	686
			Do.....	Pretoria.....	692

Rates for passengers on Government railways are 1, 2, and 3 pence (or 2, 4, and 6 cents) per mile. Freight, per 100 pounds, according to distance, first, second, and third class rates, having regard to class of goods conveyed, mining, manufacturing and agricultural machinery being conveyed at lowest rate, and furniture, glassware, and breakable goods at the highest rate, about as follows:

To—	First class.	Second class.	Third class.
Johannesburg.....	\$6.08	\$4.56	\$2.43
Vryburg.....	4.66	3.15	1.38

These railway lines are in fairly good condition, but, owing to the sandy nature of the soil, as a measure of safety the rate of speed is not above 25 to 30 miles per hour.

HIGHWAYS.

At the different termini of railways, coaches form the chief conveyance for passengers and wagons for freight. In some parts the roads

are very good, being about 30 feet wide; in other parts the veldt is used, according to the state of the acknowledged track, but the coach drivers are not particular whether they keep on the road or not; they choose the best track.

There is daily communication on most of the coach, postal, and freight routes.

It is very difficult to give an accurate report on the management and running of trains and coach and wagon service here. Towns are very widely separated, and as regards wagon transport, it is mainly dependent on the state of the weather and country, as owing to floods in winter the rivers for days are not passable, being crossed chiefly by drifts or fords, and in summer, owing to droughts, forage for cattle oftentimes very scarce. In consequence, rates vary greatly, being some periods three or four times as much as at other times, and transport riders are not willing to run the risk of losing their cattle. In course, with the advance of railways, facilities for transport of goods inward will be greatly increased. I do not know of any particular roads requiring any special mention other than as above. The route via Kimberley and Vryburg and the route via Johannesburg and Pretoria being the two direct lines from the colony to Mashonaland and Matabeleland, coaches connecting with these two railway lines run to Victoria, Tuli, and Salisbury in Mashonaland and Bulawayo in Matabeleland once or twice a week, recognized agents being present in Cape Town.

C. H. BENEDICT,

Consul.

CAPE TOWN, *June 26, 1894.*

ORANGE FREE STATE.

RAILWAYS.

Particulars regarding the ocean lines touching at the ports of Port Elizabeth, East London, and Durban (Natal) will be the reports of the consuls stationed thereat. These ports are connected with the Orange Free State by railways which run into one or more of these ports before entering this State. With the exception of the Free State Railway, which is controlled by the Natal Government, the other lines in the Free State and south of it are worked by the Cape Colony Railway Government. The terminus of the Natal Railway is Harrismith, but the line will soon be constructed between Kroonstad and Winburg, to join the great through line. In each case it will have a length of 240 miles, reckoned from Durban (Natal) to the junction on the great through line. The terminus of the Orange Free State through line, into which all the port

lines run, is Pretoria. The distances from Pretoria to the different ports are: To Cape Town, 1,040 miles; to Port Elizabeth, 740 miles; to East London, 692 miles.

To find the distance to Bloemfontein from any of the above-given ports, subtract 290 miles from the number of miles given.

In fine weather the railway is in a fair condition, but in the rainy seasons the line is dangerous, especially that part from Norvals Pont to Johannesburg. This is owing to the line being in use only a few years and the track not having thoroughly settled; besides, the ground is of a particularly soft nature, and washes away in case of even mild rains.

We have only single-track railway lines. The communication is daily, and goods trains run to the number of six per day either way (north or south). The first-class passenger fare is 6 cents per mile.

The following schedule of freight rates gives full information upon this phase of the subject:

GOODS RATES TO AND FROM STATIONS WITHIN THE ORANGE FREE STATE.

Local classification of goods between stations within the Orange Free State.

Grain and agricultural produce are included in the fourth class, otherwise, with the exception of stone fencing posts, which are conveyed in truck loads at 1d. per ton per mile, subject to a minimum charge of 1s. 3d. per ton, station to station, at owner's risk; the ordinary classification is observed.

Local rates between stations within the Orange Free State.

First class, 6d. per ton per mile; minimum charge 5s. per ton. Second class, 4½d. per ton per mile; minimum charge 3s. 4d. per ton. Third class, 2d. per ton per mile; minimum charge 1s. 8d. per ton. Fourth class, 1½d. per ton per mile; minimum charge 1s. 8d. per ton.

Live stock and vehicles are charged at the ordinary mileage scale, according to distance as per tariff applicable to the Cape Colony.

Through rates per 100 pounds between the colonial ports and stations in the Orange Free State, exclusive of cartage

To—	From—									
	Cape Town.					Port Elizabeth.				
	1	2	3	4	Wool, skins, hides.	1	2	3	4	Wool, skins, hides.
Donkerpoort.....	s. d. 11 8	s. d. 10 3	s. d. 4 7	s. d. 4 0	s. d. 4 7	s. d. 7 7½	s. d. 6 0	s. d. 2 5½	s. d. 2 1½	s. d. 2 5½
Priors.....	11 10	10 3½	4 7½	4 1	4 7½	7 9	6 3	2 6	2 2	2 6
Springfontein.....	12 1½	10 8½	4 10	4 2	4 10	8 1	6 5	2 8	2 3	2 8
Jagersfontein Road.....	12 2	10 4	5 0	4 3	5 0	8 2	6 9	2 9	2 5	2 9
Edenburg.....	12 2½	10 4½	5 2	4 5	5 2	8 3	7 2	2 10	2 6	2 10
Bethany.....	12 3	10 5	5 3	4 6	5 3	8 4	7 3	3 0	2 7	3 0
Bloemfontein.....	12 3½	10 5½	5 6	4 9	5 6	8 5	7 4	3 4	2 10	3 4
Brandfort.....	12 4	10 6	5 10	4 11	5 9	8 8	7 5	3 8	3 0	3 7
Winburg Road.....	12 4½	10 6½	6 1	5 1	6 0	8 9	7 6	4 2	3 3	3 11
Ventersburg Road.....	12 5	10 7	6 5	5 4	6 2	8 10	7 7	4 5	3 5	4 0
Kroonstad.....	12 5½	10 7½	6 8	5 6	6 4	8 11	7 8	4 9	3 8	4 3
Hellbron.....	12 6	10 8	7 2	5 10	6 10	9 0	7 9	5 2	3 11	4 7
Viljoen's Drift.....	12 6½	10 8½	7 6	6 1	7 0	9 1	7 10	5 6	4 2	4 10

Through rates per 100 pounds between the colonial ports and stations in the Orange Free State, exclusive of cartage—Continued.

To—	From—									
	Grahams Town (Port Alfred).					East London.				
	1	2	3	4	Wool, skins, hides.	1	2	3	4	Wool, skins, hides.
.....	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
.....	6 11½	5 7½	2 23	1 10½	2 23	7 9	6 1½	2 6½	2 1½	2 6½
.....	7 0½	5 9½	2 23	1 11	2 23	7 6	5 11½	2 5½	2 0½	2 2 ½
.....	7 5	5 10	2 5	2 1	2 5	7 2	5 9	2 4	2 0	2 2 ½
.....	7 7	6 0	2 6	2 2	2 6	7 3	5 11	2 5	2 1	2 2 ½
.....	7 7	6 6	2 8	2 4	2 8	7 4	6 3	2 7	2 3	2 2 ½
.....	7 8	6 8	2 9	2 4	2 9	7 5	6 5	2 8	2 4	2 2 ½
.....	7 9	6 9	3 1	2 7	3 1	7 6	6 7	3 0	2 7	3 0
.....	8 3	6 10	3 5	2 10	3 1	8 2	7 0	3 4	2 9	3 3
.....	8 4	7 0	3 9	3 0	3 6	8 3	7 1	3 8	2 11	3 5
.....	8 5	7 2	4 2	3 3	3 9	8 4	7 2	4 0	3 2	3 8
.....	8 6	7 3	4 6	3 5	4 0	8 5	7 3	4 5	3 4	3 10
.....	8 7	7 5	4 11	3 9	4 4	8 6	7 4	4 9	3 8	4 2
.....	8 8	7 6	5 3	3 11	4 7	8 7	7 5	5 1	3 11	4 6

ber and undamageable iron, sugar, coffee, soap, rice, candles, imported flour, al in bags, fire bricks, cyanide of potassium, asbestos, buckets (mining), zinc mining jacks, and mining and other machinery (excepting agricultural, s for which see classification) consigned from the forts to stations, Winburg o Viljoen's Drift inclusive, are charged 10 per cent off the second-class rates as with the exception that the rates for timber per 100 pounds to Brandfort, g Road, Ventersburg Road, and Kroonstad, exclusive of cartage, are:

To—	From—			
	Cape Town.	Port Eliza- beth.	Grahams Town (Port Alfred).	East London.
	s. d.	s. d.	s. d.	s. d.
.....	7 8	5 7	5 2	5 2
.....	8 3	6 5	5 10	5 10
.....	8 10	6 10	6 5	6 5
.....	9 4	6 11	6 6	6 6

per 100 pounds for mining and other machinery (excepting agricultural ery of colonial manufacture, charges for which see classification), sugar, soap, candles, imported flour, oatmeal in bags, fire bricks, and cyanide of sbestus, buckets (mining), zinc ingots, and wagon jacks from the under- tations, exclusive of cartage, are:

To—	From—			
	Cape Town.	Port Eliza- beth.	Grahams Town (Port Alfred).	East London.
	s. d.	s. d.	s. d.	s. d.
.....	9 1½	6 0	5 7½	6 1½
.....	9 1½	6 3	5 9½	5 11½
.....	9 2	6 5	5 10	5 9
.....	9 2½	6 6½	6 0	5 11
.....	9 3	6 7	6 2	6 3
.....	9 3½	6 7½	6 2½	6 3½
.....	9 4	6 8	6 3	6 4
.....	9 4½	6 8½	6 3½	6 4½

going exceptions, clause 153 of the tariff book to apply to traffic for port to Brandfort, inclusive.

Cast-iron pipes, when declared undamageable, are conveyed to stations in the Orange Free State at the second-class rate, less 10 per cent, and the same rate applies to tubes and piping consigned from the ports.

The rates charged for goods between stations in the Cape Colony and those in the Orange Free State, other than those before mentioned, are the sum of the charge at the published tariff for the rail journey within the Cape Colony, 1 mile 1 chain beyond Norvals Pont station, and the local rate for the journey within the Free State, with the following exceptions, viz:

(1) Live stock and vehicles are charged at the ordinary mileage scale, according to distance, as per tariff applicable to the Cape Colony.

(2) Where charging at the rates from the ports of the respective systems—i. e., Cape Town for western, Port Elizabeth for midland, and East London for eastern system—amounts to less, the port rates are charged, except in the case of stations on the branch lines from which the distance is greater than from the port, when the local rate for the extra mileage is added to the port rate.

Special-class traffic.

For articles mentioned in clauses 145, 156, and 157 of the tariff book, when consigned from the ports to stations within the Orange Free State, the rates, according to class, are charged as shown above (fresh fish being chargeable at the fourth-class rate), excepting in the case of imported produce (clause 157), when a uniform rate of 3d. per ton per mile is charged for the entire mileage; when consigned from stations other than the ports, the same mileage rates are charged as within the Cape Colony.

Goods reconsigned from Bloemfontein to the Transvaal.

A rebate will be allowed on consignments sent by rail from Cape Town, Port Elizabeth, or East London to Bloemfontein, and subsequently sold there in bulk or in part lots to merchants and others resident in the South African Republic, on the weight sent by rail from Bloemfontein to the Transvaal, of the difference between the ordinary rates charged from the ports to Bloemfontein plus the rates Bloemfontein to destination, and the through rates from the respective ports to ultimate destination, less 6d. per 100 pounds for delivery, collection, and handling of the goods at Bloemfontein.

Senders consigning goods from Bloemfontein to stations in the South African Republic, on which they intend to claim the rebate before mentioned, must produce proof at the time that the goods were originally consigned to them by rail from the respective ports.

HIGHWAYS.

The Free State highways have an average width of 75 feet. They are neither paved nor macadamized; in fact, these highways are, in rainy seasons, in such a condition as to make traveling impossible. They are the worst roads that could be found in any civilized country. Goods over these highways are transported by means of ox wagons which can load up to 4 tons. The usual rate of freight is 24 cents per ton per mile.

Passengers are carried over these highways either by post carts or by private conveyance at the rate of 20 cents per mile.

E. R. LANDGRAF,
Consular Agent.

BLOEMFONTEIN, July 28, 1894.

NATAL.

OCEAN LINES.¹

*The Castle Mail Packet Company.*¹—The following are the names of the vessels of this company, together with their tonnage and horsepower:

Name.	Tons.	Approximate horsepower.	Name.	Tons.	Approximate horsepower.
Stallion Castle.....	5,700	8,000	Drummond.....	3,705	3,600
Notlar Castle.....	5,500	6,600	Garth.....	3,705	3,600
Indel Castle.....	4,700	.....	Grantully Castle.....	3,489	3,300
Lin Castle.....	4,350	4,800	Harlote Castle.....	3,200	1,884
Ham Castle.....	4,323	5,100	Warwick Castle.....	2,957	2,500
Garden Castle.....	4,323	5,100	Dunbar Castle.....	2,700	1,620
Broke Castle.....	3,950	2,700	Mettwen Castle.....	2,700	1,620
De Castle.....	3,800	2,778	Courland.....	1,241	.....
More Castle.....	3,800	2,778	Venice.....	511	.....

All these vessels are used in the ocean service, excepting the two which are used in the coasting trade.

The rates of freight from London to South Africa are:

	Class I.	Class II.	Class III.	Class IV.
Steamers:	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Cape Town and Algoa Bay.....	47 6	33 9	25 0	22 6
Mossel Bay, Knysna, and Kowie.....	52 6	38 9	30 0	27 6
East London and Natal, including lighterage.....	55 0	41 3	32 6	30 6
Algoa Bay, including landing.....	57 6	45 0	42 6	37 6
Intermediate steamers:				
Cape Town and Algoa Bay.....	45 0	32 6	25 0	22 6
Mossel Bay, Knysna, and Kowie.....	50 0	37 6	30 0	27 6
East London and Natal, including lighterage.....	52 6	40 0	32 6	30 0
Algoa Bay, including landing.....	57 6	45 0	42 6	37 6

For different classifications can be learned at any of the company's agents.

The rates of freight homeward vary according to the class of goods.

The rates from Cape ports to Natal and between intermediate ports according to the class of goods, as follows:

Rate per ton from Cape Town up the coast.

From—	To—							
	Mossel Bay.		Algoa Bay.		East London.		Natal.	
.....	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
.....	10 0	to 17 6	10 0	to 15 0	14 0	to 20 0	12 6	to 22 6
.....	.....	.....	10 0	to 17 6	17 6	to 22 6	15 0	to 25 0
.....	.....	.....	.....	.....	10 0	to 17 6	10 0	to 20 0
.....	.....	.....	.....	.....	.....	.....	12 0	to 17 6

Charges with additional 10 per cent primage.

For further information apply to the agent of the company at Durban supplied to the United States at that place.

RAILWAYS.¹

The railways of the Colony of Natal are all owned and worked by the railway administration of the colony.

The termini of the existing lines are: (1) Charlestown, on the border of the South African Republic; (2) Harrismith, in the Orange Free State Republic; (3) Dundee coal fields; (4) Verulam, north coast line; (5) Isipingo, south coast line. A small map of the railways accompanies this memorandum.

The total length of the lines now open for traffic is 399 miles, and distances may be thus stated:

From Durban to—	Miles.	From Durban to—	Miles.
Pietermaritzburg (capital of the colony) ..	70½	Coal fields	238½
Ladysmith	189½	Verulam	19½
Charlestown	306	Isipingo	11
Harrismith	249½		

The railways of the colony are all in first-class order, and are well equipped, and capable of conveying a much larger traffic than now passes over them. They are all single lines, on a 3 foot 6 inch gauge, and are laid throughout with steel rails, varying in weight from 45 to 62 pounds per yard. All intermediate stations, or nearly all, are crossing places, telegraph stations, and post-offices.

The frequency of communication varies according to the needs of the traffic and population. On the main line, between Durban and Charlestown and Harrismith, there is one through train each way daily, Sundays included, and goods trains according to the necessities of the traffic. Between Durban and Pietermaritzburg there are three trains daily. Between Durban and Verulam there are four trains, and between Durban and Isipingo three trains each way daily.

SUPPLEMENTARY INFORMATION.

Under date of May 9, 1895, Consular Agent Prince, of Durban, transmitted to the Department printed copies of the Natal port captain's report and the annual report of the Durban Chamber of Commerce, both publications being for the year 1894.

The following paragraphs are taken from the report of the Durban Chamber of Commerce:

NATAL RAILWAYS.

There are now open for public traffic in this colony 399½ miles of railway, all being single lines (with ample sidings and loop lines), on a gauge of 3 feet 6 inches, the whole being the property of and worked by the colonial government, under the general management of Mr. David Hunter.

¹Memorandum supplied by General Manager Hunter, Durban, at the request of the United States consular agent.

ARRELA
DELTA
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(Perd)

a R.

Our railways connect the port with the town of Durban (a distance of 2 miles), as also Durban with Verulam (19 miles), on the north coast, and Isipingo (11 miles), on the south coast, and the numerous sugar plantations en route to these coast towns; Pietermaritzburg (71 miles), the capital of the colony; Ladysmith (190 miles), the junction of the lines to the borders of the South African Republic and the Orange Free State; and Charlestown (Coldstream), on the border of the South African Republic (304 miles). There is a branch line (8 miles) from Glencoe Junction (231 miles from the port) to Dundee and the coal fields in that neighborhood, and another branch line to Harrismith (59½ miles from Ladysmith), Orange Free State.

Through passenger trains (first, second, and third class) are run every day from Durban to Harrismith and Charlestown, from which latter place conveyances leave for Heidelberg (98 miles) and Johannesburg (145 miles), as also direct conveyances to Barberton (180 miles) and Ermelo and other places en route.

Passenger trains leave Charlestown and Harrismith every afternoon, and Ladysmith twice every week day and once every Sunday for Durban; and the trains that save Charlestown and Harrismith on Friday arrive here on Saturday morning in time to catch the outgoing steamer.

The M'Fongosi, New Republic, and Zululand gold fields may be reached in two or three days from here, by rail and horse conveyances. The Umzinto gold fields are situated about 55 miles from Durban, via Isipingo (by rail), from which place passenger carts run.

A general readjustment of rates will take place as soon as our railway is open to Johannesburg, when it may be reasonably expected that this colony will recover a portion of its trade, which has been temporarily diverted to Cape ports and Delagoa Bay.

The Delagoa Bay Railway has been opened and is now in full swing, and forms an important factor in the distribution of the South African import trade.

MAIL AND PASSENGER SERVICES.

The connection at Johannesburg of our railway with the Cape and Delagoa Bay lines, our mails from and to Europe will be carried overland between Cape Town and Durban.

The representations of the chamber, arrangements have been made by which to assist fast passengers for Natal, arriving at Cape Town by any mail steamer, desire to accompany the mails overland from Cape Town to East London.

The chief want now felt in connection with the passenger traffic from Cape Town to East London is a quicker steamship service, and it is reasonable to hope that, in the future, arrangements will be made by which steamers for the purpose will do so from Cape Town to Durban in from two and one-half to three days.

PORTUGUESE MAIL CONTRACT.

The colony still labors under the injustice of paying higher rates for passengers en route from London than are paid from Lisbon to Delagoa Bay by the same company, but this inconsistency must soon remedy itself.

INCREASE OF STEAMSHIP FREIGHTS FROM EUROPE.

In February the steamship companies trading to south Africa made certain increases in the rates of freight upon goods from British ports to south African ports. These increases were resented generally in south Africa as being unjustified. No exception was taken to their being brought into operation without the notice being given to shippers. Correspondence with the South African Chamber of Commerce and others was submitted to a meeting of this chamber on June 4, and the following resolution was adopted:

This chamber can not agree to the contention of the steamship companies that the reason for increase of rates, and recommends the reconstruction of the

South African Merchants' Committee in London by the substitution of elected representatives chosen by chambers of commerce at each port from Cape Town to Delagoa Bay, and that the various chambers be communicated with for the purpose of arranging details."

The chambers of commerce at other south African ports were communicated with, but no agreement was arrived at.

CABLE RATES.

For some years past the chamber has been urging upon Government the desirability of a reduction in cable rates. As the result of negotiations between Sir James Sivewright and the several South African governments, it has been arranged that from April 1 the cable rates shall be reduced to 5s. per word for the public and 2s. 6d. and 1s. 6d. for Government and press work, respectively, on the payment of subsidies to the Eastern Telegraph Company of £15,000 by the Cape Colony, £10,000 by the Transvaal, and £5,000 by Natal. It appears to the chamber that the contribution by Natal is too large in proportion to that by the Cape and the Transvaal, but in any case the reduction in rates will be generally welcomed.

CENTRAL AFRICA (BRITISH.)

According to a report to the British foreign office by Commissioner Johnston, dated Zomba, March 31, 1894, British Central Africa is the name given to a considerable area of south-central Africa which lies for the most part within the northern basin of the Zambesi, but which also includes within its limits a considerable part of the watershed of the Upper Kongo. It is bounded on the north by the Kongo Free State, the waters of Tanganyika, and German East Africa; on the east by the German and Portuguese East African possessions; on the south by the Portuguese possessions on the Zambesi, by the middle course of the Zambesi River, and by German Southwest Africa; and on the west by the Portuguese Province of Angola.

Following are extracts from Commissioner Johnston's report:

It is almost unnecessary to call attention to the fact that the part of Africa now under review is a land of great lakes. Lake Tanganyika, which forms part of the northern limit of British Central Africa, is over 400 miles in length, and varies from 60 to 30 miles in breadth. Lake Nyassa, the next in size, and the third biggest lake in Africa, is about 360 miles long, and varies from 13 to 40 miles in breadth. Lake Mweru, according to Mr. Sharpe's latest survey, has a total length of 68 miles (from entrance to exit of Luapula) and an average breadth of 24 miles. As to area of the mysterious Lake Bangweolo, it is difficult to pronounce an opinion. Its approximate area of open water during the dry season is 1,672 square miles, though immediately after the heavy rains of January and February it is probable that the area is doubled by the rise of water over the extensive marshy country lying to the south of Lake Bangweolo.

Although it lies outside the limits of British Central Africa, I might allude to the extensive and curious salt lake, Rukwa, which is situated not far distant from our northern boundary. This lake is about 120 miles long, and averages 12 miles broad. Its southern end opens out into a number of small gulfs. This lake is evidently but a shrunken remnant of what was once a large sheet of fresh water, probably draining into the Songwe Valley and Lake Nyassa. Between Lakes Tanganyika and Mweru,

is a salt lake, also called Mweru. In the dry season this lake would appear to be reduced to an enormous marsh, while in the height of the rainy season it probably presents, in the central portion, stretches of open water. Mr. Sharpe, who was its discoverer, states that canoes can not penetrate the thick encircling reed belts of this swamp. In the southeastern part of the protectorate, between the south end of Lake Nyassa and the Mlanje Mountain, lies the salt lake usually known by the name of Shirwa. It is very difficult to decide to what river system Lake Shirwa was attached in bygone years. Between its northeast corner and the valley of the Upper Shire, is a plain, which in parts perhaps does not rise more than 50 feet above the Shire.

The Zambesi is, of course, the most important stream through British Central Africa as regards length of course and volume, though, owing to the extension of Portuguese territory over part of its northern basin, it is very much cut off from direct contact with our influence, and is, consequently, far less thought of and talked about than the Shire, which we regard as our own peculiar river. The Zambesi is doubtfully navigable for canoes from the junction of the Kabompo on the north to Sesheke near the junction of the Tshobe; after that, supervene the rapids of the grand Victoria Falls. The navigability of the river is not resumed, at least to any appreciable extent, until a place called Mwankis is reached. From Mwankis to the Kansalo Rapids I believe canoes and boats can proceed for a certain distance, the best stretch of the river in the interior for more or less continuous navigation, where I am told it is possible for steam launches to ply, is from the confluence of the Kafue, past Zumbo, to the rapids about 40 miles below Zumbo, which are sometimes called the Perizengi Rapids. This stretch will, in future, be of some importance to British Central Africa. Below the Perizengi Rapids, all idea of navigation has to be abandoned until one reaches near Tete. From Tete to the junction of the Zambesi and the Shire, the river is more or less navigable for canoes all the year round, though great difficulties are experienced in the dry season in the Lupata below Tete, where the breadth of the river is restricted to about 60 yards, and the velocity of the current is 4 to 6 miles an hour. From Tete to the junction of the Shire, the river can only be navigated by steamers from six weeks to three months every year, during the rains, in December, January, and February. From the junction of the Shire and the Zambesi to the Chinde mouth, on the Indian Ocean, the river is navigable for steamers of light draft, I mean, not drawing more than 2 feet. In the time of full river, vessels of 5 feet and more can navigate the lower Zambesi and the lower Shire.

The whole valley of the Zambesi, from the confluence of the Kabompo to the headwaters, seems to be unhealthy for Europeans, in parts, singularly unhealthy. It is likely to become, by development, one of the richest regions in the world as it affords evidence of great mineral wealth, especially coal, and, in parts, and in all its districts along the lower and extreme upper course the land on which it is extremely fertile, and in many respects resembles the Lower Nile Valley. The fact that its fertility is incessantly renewed by the deposit during the rains of the alluvium brought down from the hills.

Next to the Zambesi in importance, though not in length, is the Shire, known to all that it seems almost superfluous to give much information about it. It may be mentioned that the Shire is navigable for boats and canoes all the way down from Chikwawa, just below the Murchison Falls, to its junction with the Zambesi. In the height of the dry season, the continuous navigation of the Shire to Chiromo is suspended for steamers, which have to ply between Chiromo Island and exchange their goods to the other steamers that ply between the Zambesi and Chiromo. The transshipment of goods across Pinda Island is a much trouble, loss, and vexatious disputes with the Portuguese. The Falls of the Shire are well known. During their extent the Shire descends about 100 feet. There are one or two little breaks in between the falls which are navigable for canoes, but not to any extent worth speaking of.

The navigability of the upper Shire extends from the exit from Lake Nyassa to a mile or so below Matope, the African Lakes Company's station. The stretch of river between Lake Nyassa and Malombe is navigable for steamers of considerable draft all through the year. The difficulties of navigation in Malombe have already been mentioned. Nevertheless, Malombe can be crossed at all seasons of the year by steamers drawing not more than 1 foot 9 inches, and in the rainy season by those drawing 5 feet. Below Malombe the upper Shire is fairly navigable, even for steamers drawing 2 feet, all the year round. There are only one or two places where any difficulties are met with. One is a spot known as the "Stones," a little below Fort Liwonde. Here a bed of rocks crosses the river and in one or two places, the rocks reach the surface of the water and constitute a danger rather in the full river than with the low, because at low water they can be easily seen and avoided. A little below the stones there is a broad sand bank which stretches nearly the whole way across the river. This is opposite the place known as Fort Sharpe, which, indeed, was built because the steamers were always sticking on the sand bank, and were at one time exposed to annoyance from unruly natives. Nevertheless, broadly speaking, the upper Shire is navigable all the year round from Lake Nyassa to Matope (which is 31 miles from Blantyre) for steamers which draw no more than Her Majesty's ship *Dove* (which is, I think, about 1 foot 9 inches). Unfortunately, the entrance to the Shire from Lake Nyassa is somewhat hindered by a bar of sand, which, in the dry season, has only from 3 feet 9 inches to 4 feet of water on it. This bar greatly hinders the entrance to the Shire of the Lake Nyassa steamers, these latter requiring to draw from 4 to 5 feet of water in order to have sufficient stability in the stormy waters of that lake.

The next river in importance to the Shire is the Luapula, or upper Kongo, which, under the name of Chambesi, takes its rise in innumerable streams on the northern edges of the Nyassa-Tanganyika plateau. From information which I have received from natives I am inclined to believe that the Chambesi, or Upper Luapula, is comparatively free from rapids, and is navigable for canoes, and, in its lower course, for boats drawing about 2 feet of water, and would thus afford a waterway leading straight into Lake Bangweolo and out again into Luapula, which, again, would be navigable for a little distance beyond the Lohombo. In its most southern reaches, the navigation of the Luapula is stopped by the Mambirima Falls. As far as we can learn, the navigability continues, uninterrupted by rapids or falls, until a point near latitude $10^{\circ} 30'$, where Mr. Sharpe discovered a series of rapids, acting as a complete bar to navigation, which he named the Johnston Falls. From these falls, right into Lake Mweru, there were no other obstacles in the river, which appears to be navigable for boats drawing considerable water. Lake Mweru is, of course, perfectly navigable even for big steamers throughout its whole length, but the Luapula, after it leaves Mweru, is again obstructed by rapids.

The Luangwa (sometimes known as the Aruangwa) River, which is one of the most considerable affluents of the Zambesi, is fairly navigable for canoes and rafts from below its junction with the Mapamanzi down to the Zambesi. In the dry season, however, navigation is stopped by a series of rapids situated at some distance north of the confluence of the Luangwa with the Lunsefwa, but I am informed by M. Carl Wiese that these rapids can be passed during the high river, and that the black Portuguese traders are in the habit of using the Luangwa River for about half its course as a means of transporting their ivory and other articles of trade down to the Zambesi, which they do by building rafts.

About the navigability of the Kafue River we know almost nothing. As it flows through a very mountainous country, I should say it is probable that the river can not be navigated even by canoes far above its confluence with the Zambesi.

The Ruo, except in a few patches, is quite unnavigable. I am informed that the Bua River, which flows into the southwest of Lake Nyassa, can be navigated for some distance by canoes, and the same is said about the River Rukuru, which flows into the northwest part of the lake.



In 1891, not counting the British and Portuguese gunboats, there were three steamers plying on the Zambesi and lower Shire, three steamers on Lake Nyassa, and one steamer on Lake Tanganyika. All the Nyassa and Tanganyika steamers were British, and of the others on the Zambesi and Shire one was Dutch and two were British. At the close of the year 1893 there remained one British steamer on Tanganyika, but on Nyassa, besides the three British gunboats (one of which plies the upper Shire), there were four other steamers on that lake, one German and three British. On the Zambesi-Shire there are now no less than six steamers, all of which are British. The Dutch steamer already mentioned is no longer in existence. One of the steamers, now called British, was originally a German boat, the *Pfeil*, but I believe I am right in stating that this vessel is now a British steamer and belongs to the African Lakes Company. I think there are three Portuguese gunboats, if not more, on the Zambesi, and there are the two British gunboats, the well-known *Herald* and *Mosquito*. At Chinde there are two tugs, which either ply between the river and the sea at that place or run to Quilimane, connecting with those steamers which are too large to cross the Chinde bar, or exchanging cargo and passengers with the ocean steamers in smooth weather outside the bar. I am informed that there are no less than 100 barges and lighters now on the Zambesi-Shire, of which about 80 belong to British traders.

The British concession at Chinde has attained a marked development since it was first made over to us at the beginning of 1892. A good deal of marsh has been drained, groins have been built to protect the foreshore, and an attempt has been made—not very successful as yet—to create a small dry dock for the repair of the gunboats and river steamers.

The dangers and difficulties of the Chinde bar have been from the very first persistently exaggerated. At one time the Union and Castle lines of South Africa stopped all communication with Chinde, and the German East African Line had not commenced its service. At this juncture Mr. Rennie's line of Aberdeen steamers came to the rescue, and the *Induna* began to run from Natal to Chinde. This may be said to have turned the tide in our favor. Finding that the *Induna* did not come to grief, the German line next proceeded to call; and, last of all, the Union Company established a service to Chinde on more or less fixed dates.

Before leaving the subject of water transport, I might complete my list of the means of locomotion at present available on lakes and rivers by stating that the London Missionary Society has a large sailing boat in addition to its steamer on Lake Tanganyika, and the administration is now conveying to that lake an iron sailing boat in sections for use at the south end of Tanganyika, and also a boat of the same description for Mweru. We have already one sailing boat on Lake Mweru, which is very useful for visiting the upper Luapula. On Lake Nyassa, besides the steamers mentioned, there are three or four lighters belonging to the African Lakes Corporation, and two large boats (one of them a kind of steam launch) belonging to the Universities' Mission; the German Government also has a huge barge. The administration has a lifeboat at Deep Bay and a good-sized boat attached to the Fort Maguire Station; and in addition four large boats and three small ones on the upper Shire, besides two barges and five boats on the lower Shire and two on the Ruo—one, at Fort Anderson and one at Chiromo. Perhaps it may be interesting to give the names of some of our boats, by which I have tried to commemorate celebrated African explorers connected with British enterprises in Central Africa. We have the *Henry Barth*, the *John Kirk*, the *Fred Elton*, the *Richard Burton*, the *Speke*, the *Grant*, the *Alfred Sharpe*, the *Joseph Thomson*, the *Bruce*, the *John Buchanan*, etc.

The administration had not long started when the question of overland transport was brought prominently before it. At first I was in favor of constructing a carriageable road direct from Chiromo to Zomba and thence to the upper Shire, because the Shire above Chiromo is so difficult of navigation during certain months of the year. The construction of this road was commenced, and it was decided that it should pass close to Mlanje, so as to open up communication with that important

district, but the difficulties were so great that but little progress has been made with this direct road up to the time of writing, though I have given out one or two sections by contract. It was soon decided that it was of far more benefit to the community that the road between Katunga and Blantyre should be made thoroughly practicable for wagons. In consequence, Captain Selater constructed what is now called the "Selater road," between Blantyre and Chikwawa. This road was at first intended to be little more than an enlargement of the old track cut by the African Lakes Company down to Katunga, but this track was found to follow such a steep incline in many places that it had to be abandoned and, in consequence, about two-thirds of the road from Blantyre to the lower Shire is of new and independent construction. This road has cost the administration a little over £2,000 to construct, and can scarcely be pronounced to be finished yet, not being properly connected with Katunga. However, it is practicable for wagons, and, in consequence, is of immense benefit to the community, especially in the transport of heavy goods. An excellent road has also been made at a much less expenditure between Zomba and Blantyre, and in this way Zomba is connected with the lower Shire by a carriage road.

A rough track has been cut from Zomba down to the upper Shire which is sufficient for passenger traffic but quite unsuited to wagons owing to the steep descent parts. It has not been worth while making this road carriageable, because the tsetse fly is found over a portion of it. A considerable section of the road between Mlanje and Mlanje has been made by Captain Edwards, and would have been finished the present time but for the violence of the rainy season, which, since December, has caused all road work to be suspended. This road from Zomba to Mlanje is intended to be a section of the direct route to Chiromo. Short lengths of road have been cut between different places on the upper Shire. Except, however, between the lower Shire and Blantyre-Zomba, one is not encouraged to spend hundreds of pounds on the making of a carriageable road, because of the presence, in those tracts, of the tsetse fly, which would render the passage of horses or oxen risky for them to be constantly used as a means of transport. I fear the only feasible and practical way of opening up communications with this country will be a railway running between the lower and the upper Shire.

A postal service was first established by me, acting for the British South Africa Company, in July, 1891. Prior to that date, there was no postal service whatever in the country, though the African Lakes Company, in an informal manner, usually carried the greater proportion of the mails. All letters, however, for the exterior, were to be posted at Quilimane and stamped with Portuguese stamps. The British South Africa Company's postal service in British Central Africa now extends from the seacoast to Lake Tanganyika and Lake Mweru; and a monthly service is also being organized by the collector of the Mweru district for the transport of letters to the authorities of the Kongo Free State in Katunga. All newspapers, and other mail matter coming from the exterior are accepted at their value in force in the countries of origin.

RECENT PROGRESS IN CENTRAL AFRICA.

Following extracts from the annual report of the British acting Commissioner general at Zomba, February 7, 1895, give information of developments in central Africa since the date of Commissioner Johnston's

s, barges, etc., on rivers and lakes.—At the end of 1894 there were, upon the Zambezi and Zambesi rivers, not including gunboats, nine steamers plying, three of which were built in 1894. The number of barges and cargo boats has also been considerably increased. On the upper Shire one new steamer, the twin-screw steamer *Winstone*, has been built during the past year; several new barges and boats have also been built on the upper Shire, and several vessels for use on Lake Nyassa.

Another steamer, the property of the German missionaries, has been constructed for use at the north end of Lake Nyassa. A steel sailing vessel has been placed on Lake Tanganyika by the African Lakes Corporation, Limited, which is intended to open up trade between the south end of that lake and the ports on its eastern, western, and northern shores.

Transport.—A serious question which appears at present likely to retard the progress of the country is the want of satisfactory transport from the Shire Highlands to what may be considered the head of navigation on the Shire River, Chiromo. The whole coffee crop of the country has to be transported down to Chiromo during the months of September and October, and even with the present crops it is found a difficulty. As each year, the quantity to be carried will be largely increased it is to be feared that in the year 1896 (at any rate) there will be great difficulty experienced in getting the produce of the country down to Chiromo before the rainy season commences. What is needed is a light railway from Chiromo to Blantyre; it appears, in fact, to be an absolute necessity, unless the advance of the country is to be materially checked. The length of such railway would be about 70 miles, and the cost probably between £150,000 and £200,000.

Horses, cattle, etc.—The Shire highlands have proved healthy for horses, mules, and cattle. A considerable number of horses have been imported from south Africa during the past year. Care has to be taken in their treatment on the journey up from the seacoast to Blantyre, and delays on this portion of the route have to be avoided; when once, however, they arrive in the Shire highlands they are found to be freer from sickness than in south Africa. With the importation of horses, and the improved roads, locomotion has become an easier matter in the Shire highlands than it used to be. In addition to wagon traffic, a Cape cart at the present date runs occasionally with passengers from Katunga, on the Shire, to Blantyre and Zomba, traveling at an average rate throughout of 7 to 8 miles per hour. Cattle have been imported to the Shire highlands in considerable numbers during the past year from districts west of Lake Nyassa, and from the German territory at the north end of the lake. The local German government, however, has recently prohibited the export of cattle from their north Nyassa regions.

Telegraph.—The first section of the African transcontinental telegraph line between Blantyre and Chikwawa was opened in September last. The second section of the permanent line, between Chikwawa and Tete, on the Zambesi, is now almost completed, and for some time past there has been communication with Tete by means of a temporary wire.

The port of Chinde.—This port is rapidly growing in importance, both as a transit station for merchandise going to and from central Africa, and also as a port for the shipment of merchandise to and from the Portuguese territory on the banks of the Zambesi River. The port of Chinde is Portuguese, but has been brought into existence chiefly owing to the fact that British Central Africa required an outlet at the mouth of the Zambesi. The total exports from the port for the year 1893 were valued at £10,201, the total imports being £9,147. In 1894 these rose, respectively, to £22,236 and £13,737.

Freights from Chinde to Chiromo average about £4 per ton, passages being £7 per person; freights from Chinde to Blantyre, £8 per ton, passages £12; freights from Chinde to Lake Nyassa (Fort Johnston), £15 per ton, passages £16.

Bank.—During the past year banking operations have been commenced in British Central Africa by the African Lakes Corporation, Limited. They have established a bank at Blantyre, with a branch at Chinde. This has done much to facilitate mercantile business.

Postal.—The amount of matter transported by the postal service of British Central Africa has increased largely during the past year. Taking the month of November, 1894 (as an average month), the total number of articles carried, including post cards, letters, newspapers, and parcels inward and outward, was 25,592, as compared with 19,383 in November, 1893. In addition to this, the postal service of

British Central Africa has carried gratuitously sealed bags of correspondence to and from Her Majesty's gunboats on Lake Nyassa.

During the year there have been established new post-offices at Bandawa (Nyassa) Kota-Kota (Nyassa), Fort Rosebery (Luapula River). A monthly service has been established to and from Katunga via Lake Mweru.

The parcels post, which was established in 1894, has been found of great service, and the rate of parcels to England has been recently reduced from 1s. 9d. to 1s. 6d. per pound. Arrangements have been made for the extension of the parcels post between the British Central Africa Protectorate and Zanzibar, India, and Aden, which will come into operation on April 1, 1895. Steps are now being taken for the establishment of a money-order system throughout the post-offices in British Central Africa. Post cards for internal circulation and for external (to Great Britain) have been introduced. English mails reach Blantyre about once a fortnight, a monthly mail coming via Cape Town, and a monthly mail coming via Zanzibar.

The postal service of this protectorate and sphere still shows an annual loss. This is due to the fact that incoming mails are only carried to the port of Chinde at the expense of the country of origin, and the heavy cost of carrying such mails from Chinde throughout British Central Africa and the lake districts is borne by the British Central Africa postal service. As an example of the heavy bulk of postal matter constantly being carried for great distances in this country, I may instance a mail which reached Tanganyika from Chinde on November 26, 1894, which weighed over 4 hundredweight, this having been transported for over 1,000 miles from the coast, for a considerable portion of which it was carried on the heads of native carriers.

Indian traders.—During the past year a number of Indian traders, locally and on the African coast known as Banyans, have settled in British Central Africa, at Chiromo, Chikwawa, and Blantyre. It is probable that before long they will have established stores at the south end of Lake Nyassa. The presence of these men does a great deal toward encouraging small trade on the part of the natives of this country, as not only do the natives prefer trading with a Banyan to a European, but the Banyans are always ready to transact any business, however small. In concluding this short report, I may say that, although the market of British Central Africa is not as yet a very large one, trade is increasing with such rapidity that there is every prospect of its being before long a market well worth consideration on the part of our merchants at home.

ANNUAL REPORT ON CHINDE.

Each year shows a steady increase of the importance of Chinde as a transit station for merchandise going to central Africa. To British people it is especially important, owing to its extended water communication with British Central Africa, it being, at present, the only navigable mouth of the Zambesi. As the town of Chinde is only 1 mile from the sea, the coasting steamers, after entering the harbor, are enabled to discharge cargo direct into the river steamers and lighters, which convey same to the interior. The British concession is a piece of ground on the south bank of the river, with river frontage of one-fourth mile, and a fall back of 260 yards from the foreshore granted by the Portuguese Government to H. H. Johnstone, C. B., in the latter part of 1891. It is of great importance to all shippers of through cargo to English territory. This concession has been divided into several small plots of about 800 square yards each, which are sublet to the various traffic companies and merchants for the purpose of building bonded stores for their goods in transit. Thus merchandise for British Central Africa not immediately transhipped to the interior can be landed, stored, and afterwards forwarded free of all duties or other charges. To give some idea how great a benefit this concession is to business people shipping goods to British Central Africa, where one small iron store existed at the beginning of 1892, there now stand large iron warehouses which nearly half cover the whole concession.

Another great point to everyone's advantage is being able to avoid the old-fashioned, tedious boat journey up the Quaqua or Quchmane River when that port was the only recognized entrance for passengers and cargo bound for central Africa, and which journey often took as long in the dry season as six to eight days through the most uninteresting part of the country, infested by mosquitos and other venomous insects, to arrive at the end after a journey of about 4 miles overland at a point on the Zambesi (Vicente) which any of the river steamers can easily reach after leaving Chinde in one and one-half to two days.

The principal steamship lines running here are the Union Steamship Company every month, and J. F. Rennie & Sons every three weeks from the south, and the Deuch East Africa Line and the Union Steamship Company every month from the north. Besides the vessels of the above-mentioned companies, other steamers have arrived during the year specially chartered by various firms direct from home. In cases where steamers are too large to cross the bar at the entrance of the river, connection is made by a steam tug stationed here. For passenger traffic, the majority of the Union Steamship Company's steamers which call could not be improved on.

The Chinde harbor is a good one, with plenty of water for a large number of vessels of deep draft. There are two large hulks moored in the harbor, both of which belong to British firms. They are of much service, as the coasting steamers can go alongside to discharge their cargo direct into them, and the river steamers load in a similar manner, and vice versa.

The harbor is excellent, being as good if not better than that of any harbor on the coast. There are several powerful steam launches and steel lighters of large capacity.

The flotilla for river traffic has been greatly increased during the past year by many new stern-wheel steamers and steel lighters of shallow draft capable of carrying large quantities of cargo. Experience has taught that the best method of taking large quantities of cargo to the interior is for stern-wheel steamers to tow lighters on either side; much better than side-paddle steamers towing astern.

The principal inland traffic companies are the African Lakes Corporation, Limited, and Sharrer's Zambesi Traffic Company.

Chinde is connected with Quillimane by telegraph, and thus has connection with Chiromo, on the Shire, and Tete, on the Zambesi, including all the intermediate stations.

There is a Portuguese post-office in Chinde, through which postal matter for Portuguese territory is forwarded; all other mails are sent to the British post-office.

The postal-exchange office for British Central Africa is situated in the British concession, there being resident a head postmaster and postmaster. The mails are made up and exchanged with Europe, India, and south and east Africa.

BLOCKING THE OLD SLAVE ROUTES.

The London Times of May 14, 1895, in an account of recent military operations in Nyassaland against slave traders, states that immediately after they had been concluded steps were taken to establish a new administration station and fort on Chikala. "This," adds the Times, "will form the northernmost of the line of posts which block the old slave routes to the east coast, and will effectually control the whole country between the northwest end of Lake Shirwa and the south end of Lake Nyassa."

GERMAN COLONIES IN AFRICA.¹

In April, 1884, Prince Bismarck gave official recognition to the beginning of the German Colonial Empire by his dispatch to the German consul at Cape Town announcing the establishment of a German protectorate over what was then known as Luderitzland, a settlement founded in 1882 on the west African coast, north of the Orange River, by a Bremen merchant, Herr Lüderitz. This step was quickly followed by similar movements. The Togoland and Cameroons protectorates were proclaimed by Dr. Nachtigal in July, 1884; German East Africa made a start at the end of the same year, and 1885 saw German protectorates established in New Guinea and in the Marshall Islands, in the South Pacific Ocean.

Ten years have now elapsed since this beginning was made, a period sufficient to allow of stock being taken of the work already accomplished by the youngest of the colonizing powers, and of an opinion being formed as to the success of the enterprise.

The frontiers of all the possessions acquired by Germany, amounting to about five times the superficial area of the Fatherland, have now been definitely delimited, with the exception of the Togo-Hinterland; and the local administrations, no longer preoccupied with the question how best to take part in the scramble for Africa, will now be able to give a more exclusive attention to consolidating German power and developing the resources of the districts under their charge.

TOGOLAND.

The colony of Togoland is situated on the Slave Coast, in the Gulf of Guinea, with a coast line, often very difficult of access, 52 kilometers in length, extending from the frontier of the French colony of Dahomey and its dependencies, longitude 1° 41' east of Greenwich, to the frontier of the transvolta province of the British Gold Coast Colony. On the east longitude 1° 41' is the boundary; on the west the frontier trends in a westerly direction till it strikes the River Volta, at about 6° 40' north latitude, and then follows the left bank of the Volta until that river enters the Anglo-German neutral zone; thence the western frontier runs due east along the south limit of the neutral zone, and then trends northward. As stated above, the northern frontier of Togoland in the direction of Tschantoland is still undefined, and the total area of the colony can not, therefore, be stated; but the territory hitherto claimed by Germany is estimated at 60,000 square kilometers.

Sebbe, the capital, lies near the eastern frontier of the colony, but has little commercial importance. The trade of the colony is centered at Klein Popo.

¹ Extracts from report of British embassy at Berlin, October 26, 1894.

Lome is also a thriving town, with no less than fourteen of the twenty-four factories working in the colony. Other coast towns are Porto Seguro and Bagida. Kratschi, an important trade center on the western frontier, a little to the south of the neutral zone, and Kpando, lower down the Volta Valley, are the largest emporia in the Hinterland.

On March 1, 1888, the first postal agency was opened in Klein Popo. There had previously been a messenger service, organized by the governor, between Klein Popo and Quittah, in the Gold Coast Colony, which was intrusted to the Houssa police. This was, however, found too onerous, as it monopolized the service and time of ten out of the twenty-five men of which the force consisted. The head agency at Quittah of the Bremen firm of Vietor & Sons consequently undertook to convey the German overland mails from that town to Klein Popo, and vice versa, three times every fortnight, and the arrangement is found to work very satisfactorily. In March, 1890, a second postal agency was opened at Lome.)

Besides this overland route from Accra and Quittah, the steamers of the Woermann and English lines deliver and accept mails whenever possible. (This is not often the case in bad weather.) Postal parcels can, however, be forwarded only by the Woermann line, and must be landed at Klein Popo or Lome and not at the neighboring British ports.

There is also a weekly post eastward with Agoue, Grand Povo, Kotonu, and Porto Novo, in the neighboring French protectorate, which is of use not only for local purposes but for forwarding correspondence by the French packets to Bordeaux.

Togoland is now connected with the Gold Coast Colony by a telegraph line 50 kilometers long, from Klein Popo, via Lome, to the British frontier, and thence by the African Direct Telegraph Company's cable with Europe. The line from Lome to Quittah was opened on January 9, 1894, and the extension to Klein Popo shortly afterwards. Since April last there has also been opened a telephone between Klein Popo, Lome, and Shebbe (communication with the latter town being reserved for official use only).

Togoland, as well as all the other German colonies, have joined the International Postal Union. In the interior of each colony the postal rates are the same as in Germany.

To show the progress already made by Togoland, I may, in conclusion, summarize a letter of Herr Vietor, a Bremen merchant long connected with the Slave Coast, which was published a short time back in the Reichsbote. He begins by contrasting the Togo of to-day with the Togo of 1884:

In 1884 it was a mere wilderness with four small factories on the coast, of which Klein Popo alone had the slightest importance. There were then at Klein Popo three German firms, of which one shortly afterwards retired, one English, and two French houses. There were not more than three, or at most four, decent dwelling houses. There was, indeed, an English mission, but it was managed by black missionaries. Europeans lived there on sufferance, and had several times to claim pro-

tection from German ships. There was no idea of planting trees or forming plantations; not a tree was to be seen even in the courtyards of the few houses which existed.

And what has ten years of German rule effected? There is, first of all, perfect security, and no longer any question of dependence on native chieftains. Instead of three, there are now at least ten German firms, with thirteen houses, while the two French houses have each started another subsidiary establishment, not to speak of the new Government buildings. Almost all the Europeans have comfortable dwelling houses. Besides the little mission alluded to above, there is now the Bremen mission and two or more Catholic missions on the coast. From Lome and Klein Popo, fine wide roads lead into the interior. Coconut plantations fringe the whole coast, while inland from Shebbe there is a whole series of coffee plantations. In the coast towns there is a local police, while a small body of constabulary keep order in the interior. In Klein Popo there is a Government school and a Government doctor; road making and arboriculture are both going ahead, and excepting the salary of the governor and his secretary all this is paid for out of the colony's own income.

CAMEROONS.

The colony of Cameroons, situated on the Bay of Biafra, opposite the Spanish island of Fernando Po, has a littoral 320 kilometers long, extending from the Rio del Rey estuary, 4.30° north latitude, to the River Campo, 2.14° north latitude. It can best be described as an irregular, pear-shaped territory, abutting, for a short distance on the north, on the south shore of Lake Chad.

The Cameroons colony may be divided into four parts: (1) The coast region, a land of primeval forests, a fruitful and rich soil, but moist, and, for Europeans, unhealthy; it is practically to this littoral that the German undertakings are, as yet, confined. (2) Adamana, a high-lying, grassy, thickly populated table-land, where the temperature is cooler and the climate much healthier than on the coast. (3) The practically unexplored Hinterland, forming the basins of the upper Nyong and upper Ngoko, in the southeast of the colony. (4) The country which may be described as the Cis Shari Bagirmi, the district lying to the south of Lake Chad, joined to the rest of the Cameroons by a narrow neck of land, variously estimated at from 60 to 105 kilometers in width. The future prosperity of the colony depends on the developments of Adamana, along the courses of the Rivers Nyong, Sanaga, and Mbam, an important feeder of the Sanaga. Factories have been built on the Sanaga as far up as the Edea Falls. Three days' marching upstream brings the traveler to the Herbert Falls. The Sanaga River has never been explored by Europeans above the Nachtigal Falls, about 12.30° east longitude, a curious neglect of what should be the great waterway into the interior. It is said by the natives to be navigable for a considerable distance above the falls.

In 1882, before the establishment of the German colony, the Hamburg firm of Woermann, which has since then been so closely connected with German colonial enterprises, established a steam service between Hamburg and west Africa, making the journey from Hamburg as

quickly as the British steamers from Liverpool. In 1885 the imperial post-office arranged with the Messrs. Woermann to take charge of the mails for west Africa, the firm receiving in return the ordinary international postal sea-transit charges, and the right to call their vessels "postal steamers." In 1887 the imperial post-office established a regular postal agency at Cameroons, which, during its first year's work, received 6,930 and dispatched 4,200 letters, etc. (including 30 parcels). In 1891 30,000 letters, papers, etc., passed through the Cameroons post-office, among which were 430 postal orders, amounting to a total of £3,750, and 700 parcels. On the incorporation of Ambas Bay in the colony, a postal agency was opened at Victoria, for the use of the factories on the coast from Rio del Rey to Bimbia, and of the various missions. The postmaster in Cameroons receives £375 a year salary from the imperial post-office. Additional postal agencies were established at Bibundi in 1891 and at Gross Batonga, the chief trade center in the southern district, in 1893.

The Cameroons post-offices, besides making use of the Woermann steamers, which call once a month at Cameroons, Victoria, and Bibundi, receive and forward mails by the British and African Steamship Company, and by the African Steamship Company, which call at Cameroons every three weeks. Letters forwarded by the German Company direct to Hamburg reach Berlin in twenty-four days; by the English steamers in thirty days. In the local colonial service, letters are forwarded not only by the Woermann steamers but by the Government boats, German merchantmen, and any other available means of communication.

The Cameroons telegraph station was opened in February, 1893. The cable from Cameroons, 337 kilometers long, is laid to Bonny, in the Niger Delta, where there is a station of the African Direct Telegraph Company; thence the communication is over the English line, via Brass, Lagos, Acra, Sierra Leone, and Bathurst to St. Vincent and England.

NAVIGATION.

During the year ending July 31, 1893, 64 ships of a total tonnage of 127,868, arrived in the colony, exclusive of the ships of the imperial navy. Of these 38 were English and 26 German. In recording this division of trade, the official memorandum adds, "the German steamers have lately run the British steamers in the Rio del Rey district very close."

The only means of transport in the colony, excepting, of course, the ocean steamers which touch at the ports, are nine small steamers, boats, and canoes. On shore everything has to be carried by porters, as there are as yet no beasts of burden available for the transport service. Since the Rio del Rey has been explored the ocean steamers regularly call there.

In the Kribi district, the Elea Falls of the River Lokundje have been passed, and the river explored in boats as high as Bipindi.

The Njong River has been navigated by small steamers as far as the Mount Falls.

In the Victoria district the roads to Bimbia, Bota, Busumba, and Bonyongo have all been repaired and a new road to Buea begun.

GERMAN SOUTHWEST AFRICA.

German Southwest Africa is bounded on the south by the Orange River; on the east, the twentieth degree of longitude to latitude 22° south; and north of that intersection the twenty-first degree of longitude forms the frontier, with a long tongue of land in the northeast corner, giving the colony access to the Zambesi above the Victoria Falls; on the north, the River Cunene to the great cataracts; thence the degree of latitude to the River Cubango; that river to Andara, and thence a line to the Katima Rapids on the Zambesi, forms the frontier; on the west, the Atlantic Ocean.

The German Colonial Society have established direct steam communication between Hamburg and the mouth of the Swakop, or Walvish Bay; but considerable difficulty has been encountered at the former place in landing goods by means of surf boats. On November 20 next, the fourth steamer dispatched this year direct to German Southwest Africa is advertised to leave Hamburg, the passage taking about a month. It is reported that means will be taken to improve the landing place as soon as funds permit; if possible, during the course of next year.

There is also a regular steam communication, once every four weeks, between Cape Colony and its dependency Walvish Bay. Messengers of the German West Africa Company carry the mails to and from Windhoek, Otjimbingue, and Tsaobis, in connection with the Cape-Walvish Bay service.

GERMAN EAST AFRICA.

The frontiers of German East Africa, the creation of Dr. Carl Peters, were defined by the Anglo-German agreement of July 1, 1890. This large tract of country, 955,220 square kilometers in extent, is bounded on the north by British East Africa and Lake Victoria Nyanza; on the west, by Lakes Tanganyika and Nyassa and the Stephenson road; on the south, by the River Rovuma, and on the east by the Indian Ocean, with a coast line of about 360 miles.

As the result of the negotiations which have long been pending between Germany and Portugal as to the frontier of their respective spheres of interest near Cape Delgado, it was decided last month that the line of $10^{\circ} 40'$ south latitude should form the frontier from the coast till it strikes the River Rovuma, so that both banks of that river's estuary and Kongo Bay remain German territory, and the colony's

limits are extended on the coast as far as Cape Delgado, all the territory in dispute to the south of 10° 40' falling to Portugal.

TRANSPORTATION, POSTAL SERVICE, TELEGRAPHS, ETC.

Direct communication between Germany and the colony is maintained by the German East African Mail steamers; besides the steamers on the main line—Hamburg, Zanzibar, Natal—which call at Tanga, Dar es Salaam, and Lundi, the company have undertaken a subsidiary service along the coast from Lamu in the north to Inhambane in the south, calling at all the ports on the intermediate coast. East African mails are also received and dispatched by the British East Indian Steam Navigation Company and by the French Messageries and the Portuguese Royal Mail. Mails are also forwarded to and from Zanzibar twice a week in dhows, and there is a daily land post between Bagamoyo and the capital, Dar es Salaam, the postmen receiving for the journey there and back, 150 kilometers 3 rupees (4s. 6d.). The head postmaster at Dar es Salaam receives £500 a year from the imperial post-office; seven postal clerks in the colony receive £300 a year each.

In 1892 a monthly postal service was organized between Dar es Salaam and Lake Victoria Nyanza, the native postmen performing the journey within fifty days. They wear tokens indicating their employment, and carry waybills on which the officials at all intermediate stations note the time of arrival and departure.

Telegrams to Germany are forwarded by the Bagamoyo-Zanzibar cable, each word costing 7s. 9d. (7.85 marks). A land line, 184 kilometers long, connects Bagamoyo with the northern ports, Sadani, Pangani, and Tanga. The land line is equally serviceable for telegraphic (Morse system) as for telephonic purposes, the rates being the same as in Germany. The native (Suaheli) merchants make frequent use of the telephone, as their language can not be fully represented telegraphically. In 1892, the first year of its employment, no less than 22,723 messages were forwarded.

RAILROADS.

The German East African Railway Company has already completed the first section of the Usambara Railway, which was opened, on the 16th instant, from Tanga to Pongwe, an inland town on the Pangani River, a distance of some 15 kilometers. It is proposed to extend this line eventually to the foot of the Kilimanjaro Mountain, and thence to Speke Bay, on Victoria Nyanza. Many difficulties have been successfully contended with in constructing the line. As originally built, it was not strong enough to withstand the rainy season, the supply of stone running short, as did the supply of dynamite for blasting purposes the quarries being located some 12 to 17 miles from Tanga; and in addition to the 30,000 iron sleepers, 20,000 wooden mangrove sleepers were found necessary as under supports, as without these latter

there was no way of fixing the iron sleepers in the sandy soil. The great part of the wooden sleepers were imported from the British island of Lamu. By the end of this year it is hoped the railway will be open as far as Ngomeny (29 kilometers), and by next summer to Segä, in the fertile Usambara district; it will then be of great use in developing the coffee plantations.

The National Zeitung, in a recent article on the German colonies in Africa, calls attention to the opening of this railway as one of the most important and hopeful signs of German progress in east Africa. European rule in the Dark Continent is bound up with the railway question. So long as the negro is the only means of transport, so long will the Arab slave raider and the slave trade flourish. The construction of railways is the great civilizing means by which this traffic can be got rid of; and no better field for German enterprise can be found than railway building from the coast to Kilimanjaro, and Lakes Victoria Nyanza and Tanganyika. "France, Italy, Belgium, and England," says the writer, "have all recently annexed large tracts of territory by force of arms. Let us show ourselves their equals by undertaking a great work of culture which will do far more for the real civilization of Africa than all their victories."

With reference to the trade of the southern districts, Baron Von Schele, the present governor of German East Africa, states that the only important exports are ivory and india rubber. The English Nyassaland traders have opened a flourishing trade with the Tanganyika and Rikwa lakes districts in the German sphere, "and it is more than ever necessary that we should protect our trade by establishing a customs barrier from Lake Nyassa to the northern end of Lake Tanganyika. These custom-houses would not for the moment bring in much revenue, but the effect they would have in developing our trade toward our own coast would be considerable." His excellency considers that a new post should be established at once at the southern end of Lake Tanganyika, and another near Ujuji, and these could easily be utilized for custom-houses. "If this were done and a steamer provided, the customs control and the political situation would be equally benefited. The launching of the *Hermann von Wissemann* has been of immense benefit to Langenburg Station and to German influence on Lake Nyassa, and the sooner a similar steamer is provided for Tanganyika the better."

It is further proposed to open a direct trade route solely through German territory between Kilwa and Lake Nyassa, and so be independent of the Shire-Zambesi line of communication through the British Nyassaland Protectorate. The governor considers that the lowlands, except along the larger rivers, are of far less commercial importance than the hilly uplands, which form the larger part of the country. "Here lies a treasure for the Fatherland, the value of which can not be overestimated." He believes that the Usambara and Pare highlands, as well as the great central table-land stretching to the lakes, are,

both as to soil and climate, suited for German agricultural immigrants, who could themselves till the land and raise cattle. As to the supply of working hands, Chinese coolies or laborers from some other similar race will be necessary for the present, but his excellency is convinced that by good treatment the natives can be gradually trained to take their place. Humane managers have never any reason to complain of want of labor, "but where the stick rules, the workmen desert, and a body of disciplined and skilled laborers can never be formed."

His excellency strongly urges the construction of roads, and especially of railways, by which means alone the country can be effectively opened up. "I recommend railways the more earnestly because the cost would be little more than that of ordinary roads, if the rails are laid in a cheap and primitive way corresponding to the object in view."

The cotton exported from German East Africa to Germany is reported to be of good quality, equaling that known in the trade as "middling Texas." The price quoted for the best quality is 3½d. per English pound, as compared with 4d. for best Texas cotton. Inferior cottons are also exported, good in quality and staple, but not up to the mark in color.

FREE TRANSIT SYSTEM.

Before leaving German East Africa, there is yet another contrast to which I wish to call attention. By the Berlin act, the free transit system, might, with the consent of the territorial power, be applied on the African littoral extending from latitude 5° north to the Zambesi, thereby establishing a sort of free transit local option, which has apparently yet to become popular on east African coast. Portugal at once declined to have anything to do with it. Germany still retains the original reserves made by the Sultan of Zanzibar before she acquired her part of the mainland. The system is at present applied in the Sultan's possessions between the Rivers Wanga and Juba, including Witu, in the coast line of the English possessions. There is, moreover, no question whatever as to reciprocity between the east Africa neighbors. A German may import goods into British East Africa in transit for German East Africa, and pay no duty whatever at Mombasa or anywhere else until he reaches German territory; whereas, a British trader sending goods through the port of Tanga to a British district in east Africa, would have to pay full import duty at the German port of debarkation.

WEST COAST.

The German colonies on the west coast have already been described in extracts from the report of the British embassy at Berlin, under the heading "German Colonies in Africa."

ANGOLA (PORTUGUESE).

The following information is taken from a report upon the Portuguese Province of Angola, made in 1892 by Commercial Agent Heli Chatelaine, then at Loanda, and published in Consular Reports for December, 1892, No. 147:

POSITION AND AREA.

As defined by the recent treaties with Germany, England, and the Kongo State, the Portuguese Province of Angola is one of the largest territorial divisions on the new map of Africa. Owing to its geographic position, variety of climates, natural resources, and to the progress already accomplished in the civilization of the natives, the intrinsic value and immediate possibilities of Angola surpass those of any other possession in tropical Africa.

From 4° 40' to 17° 20' south latitude it has over twelve geographic degrees of sea-coast and the two best harbors of the whole west coast—the mouth of the Kongo River and the Bay of Loanda. Stretching to the interior as far as the Kasai and Zambesi rivers, it forms an irregular quadrangle covering about 1,250,000 square kilometers. In the north and east it borders on the Kongo State, in the southeast on British Zambesi, and in the south on German Southwest Africa.

OCEAN LINES.

The declared exports of Angola amounted in 1890 to a little less than \$5,000,000, the imports to about the same sum.

Seven lines of steamers—two Portuguese, one English, one German, one French, one Belgian (to the Kongo), and one Dutch—connect the province with Europe. Though most anxious to have it, the province has no direct communication with the United States.

The principal ports are Kabinda, Kongo, Ambrizette, Ambriz, Loanda, Novo Redondo, Benguella, and Mossamedes.

A line of small steamers plies on the Quanza River, connecting Loanda with Dondo; and the lower courses of the Lifune, Dande, Bengo, and Longa Rivers are accessible to sailing craft. The coasting trade is largely done by sailing vessels.

RAILWAYS.

The railroad from Loanda to the interior is built as far as the Lukala River, and Catombela is connected with Benguella by a small railway. In the south most of the produce is transported from the highland to Mossamedes by the Boers in their ox wagons. Yet well-nigh the whole produce of the interior is still brought down to the coast by the human beast of burden in caravans of native traders, of whom the Mbaka (Ambaca), Ma-hungu, and Kassarji (Cassange), with terminus at Dondo or Loanda, and the Mbalundu (Bailundo) and Viye (Bihe) people, with terminus at Catombela or Benguella, are the most important.

LOANDA.¹

A spacious harbor, a city on sand and arid cliffs, a dry and sand-logged stretch of maritime plain, two inclosing rivers, and a magnificent hinterland. Such is the heart of Angola, Portugal's most important colony.

¹ Extracts from annual report of British consul at Loanda, January 20, 1894.
533A—32

One does not expect to find much civilization 8° south of the line, on a sweltering African beach; but, nevertheless, within a stone's throw, as it were, of the blazing equator, and the camp fires of Kongo cannibals, St. Paul de Loanda has been a white man's city for upward of three hundred years. It has streets and squares and shops and warehouses, forts and churches and statues. There is a commodious custom-house and a large public workshop, a bank and two railway stations, an observatory, a well-appointed hospital, and an imposing townhall, the latter in course of erection.

There is no finer haven within the circuit of the African continent than Loanda harbor. Formed by a series of scallops in the crumbling cliffs, and a long, low sand bank which breaks the Atlantic swell, it was a gift of nature, abundantly roomy, and as safe as a dock. At one time, vessels could enter on either hand, and run close up to the town; but now the southern pass is practically closed, and the best of the harbor shows ominous patches of silt.

But a port, whatever its merits may be, is merely a gateway, and the city of Loanda is only a tollhouse. Its inhabitants (some 2,000 whites and 14,000 blacks), with comparatively few exceptions, live upon the ebb and flow of traffic with the interior. Undoubtedly, therefore, there must be something in the interior which pays.

The natural highway to this favored land is the River Quanza (one of the two already mentioned as boundaries), which enters the sea about 40 miles south of Loanda Harbor, and is navigated for 160 miles or so, although not without much bumping and scraping and transfer of cargo by two light-draft steamers and an attendant fleet of barges belonging to a local company, as well as by similar vessels owned by private firms.

To the south of the Quanza, there lies an enormous tract of raw, untutored heathendom, where picturesque savages, clothed in little but beads and charms, may be seen lolling in the shade of fringed groves, while the pot of thickening palm oil simmers above the lazy midday fire. This is the Kisama country. Beyond the distillery and the isolated trading stations, at the point where the Quanza ceases to be navigable, as it debouches from a gaping canyon, there stands, in a situation of great natural beauty, the most interesting town in the province. It is not a large place, nor is there anything attractive about its buildings. A broad public square, surrounded by squat-looking shops and warehouses; two or three adjacent streets, of the same indifferent architecture; a few rows of the rubbishy shanties of town-bred people of color, ranged behind under tropical foliage; and the whole within gunshot of the river, where the washerwomen wash and the servants draw water the livelong day—that is Dondo. But Dondo is alive with dusky energy. It is a mart and rendezvous of roaming pagans; a swarming caravansary of benighted tribes. Down the long and winding macadamized road which leads to the town from a great plateau on the east they stream in almost endless succession, and even in single file.

though the highway is wide enough for a dozen abreast, these gangs of untamed adventurers, loaded with African produce and redolent of primeval savagery, but all of them objects of absorbing attention, like denizens of another world. These sturdy fellows, with close-cropped heads and a general appearance of good temper and fearlessness, are Bailundus from the south. Their country is fifteen days' journey away, on the highlands near the sources of the Quanza. From the same distance to the north come these Shingas of the Kwango, lithe and graceful, but not overstrong, and not too honest, either, with their greasy hair in dangling plaits, the skins of leopards and monkeys about their loins, and their nakedness crusted with the dirt of a life-time. And so, from all around they come; Libolos, Kibalas, Bailundus, Masongos, Bangalas, and Shingas; and likewise the demi-semicivilized men of Ambaka, who have a smattering of figures and a reputation for smartness, and who have been known to trade all the way across the continent, from Angola to Mozambique.

Here, then, is the explanation of Angola's prosperity—poured into Dondo by these streaming files of swarthy humanity all the year round, and especially during the earlier months, when the traffic increases to such an extent as to become a source of astonishment even to those who are accustomed to it. The existence of so notable a center of commercial activity, dependent entirely upon the good will of unsubdued tribes, who are as easily excited to alarm as a flight of sea fowl resting on a sand bank, speaks in favor of Portuguese administration. Notwithstanding the old-time slave trade, the natives and the colonists are on the best of terms. Dondo is one of many illustrations of the confidence which exists between them, and of the peaceable effects of being peaceably disposed.

After describing the barter with the natives at Dondo, the report continues:

Next morning they may be seen in their original garb of crusted dirt and adamite aprons, with burdens of from 60 to 90 pounds weight on their shoulders, toiling up the hot and weary road which leads to the table-land and region beyond.

The outgoing loads are of the most varied description. They comprise every article already mentioned as imported, means of barter, and also provisions of wine and other supplies for the traders, Government officials, managers of estates, missionaries, and other Europeans who reside in the neighboring districts. Now and then they include portions of steam engines; machinery for husking coffee and crushing cane; huge cauldrons for purifying wax, and distilling apparatus.

At the summit of the pass there is a wayside hamlet and military station, and a few yards beyond an important bifurcation in the road. One branch—the transcontinental it should be—strikes off in unmacadamized freedom to the east, and, taking the no longer navigable Quanza as a guide, runs out for nearly 150 miles, through a series of

villages, stations, and settlements, to the flourishing town of Malanji—noted for its trade in india rubber—and then, abandoning the river, which here comes up in a bend from the south, pushes on for 100 miles more to the frontier post of Kasanji, where, for upward of twenty years, civilization has tapered off to a colored official accepted on sufferance by the aboriginal Bangalas. In a direct line, this point is almost exactly 350 miles from the city that was founded over three hundred years ago. Beyond it lies an equal extent of unoccupied Angola, including the sources of the Kwango and Kasai; the raided Lunda country; the head waters of the Zambesi, and that fateful streak of delimitation which divides the Portuguese possession from the Congo Independent State. Behind it ebbs and flows the colonial trade; the ebb bringing nothing but useful products, while every advancing wave lands the rum barrel higher. The other branch of the road from Dondo is a continuation of the engineered highway which ascends the pass. Bearing to the north, it sets out across the plateau, but soon begins to bungle at gullies and water courses; and, 30 miles from its starting point, terminates at a collapsed bridge, on the River Lucalla, a tributary of the Quanza.

This highway was intended to connect the port of Dondo with the coffee country, of which the tributary forms the southern fence. Kept in serviceable order it would be an invaluable boon to both planters and traders. Why it is not so maintained is a mystery to the wayfarer, who sees how few repairs are really necessary. With the coffee season beginning, crops plentiful, prices in Europe unusually high, vehicles rotting on their axles, and animals eating their heads off, the situation is sufficiently irritating, no doubt, to mercantile common sense.

* * * * *

The garden of Angola is left behind, and before us lie its pasture lands, the wide valleyed acres of Ambaka. This is the home of the wandering native traders who have been mentioned as sometimes crossing the continent to Mozambique. It is an open, fertile, rolling country; is fairly healthy, abounds in cattle, and, with proper management of its numerous streams, would grow anything. In fact, Ambaka might fill the land right down to the sea with endless supplies of wholesome, fresh food.

An idea exists that some such beneficent change will naturally take place as soon as the new railway erects its last station upon one of the bare hillsides of the district. But there is nothing in progress which justifies the hope. Provisions are as dear in Ambaka as they are on the coast, and are likely to remain so a very long time, for two reasons, of which the first is that the natives will not part with their cattle except for slaves. When asked to take money as payment, they reply that they have more of that stuff than they know what to do with. In spite of their trading instinct, therefore, and the faint tincture of

civilization which distinguishes them from their neighbors, it is evident that the development of the country will be delayed for generations if left in their hands. The other reason is the dominant ambition of every white man either to become a merchant or to own a distillery.

Without a doubt, however, the railway to which reference has been made will realize many of the hopes which are fixed upon it. It will not work miracles in human nature, but it will reduce the expense of transporting coffee from the coast from $1\frac{1}{2}$ penny per pound to about one-third penny, provided that the owners of estates and local dealers can find means of getting the produce to the line economically, and will forever keep out of their account books such outstanding items as £7 10s. for the purpose of a barrel of cement worth 14 shillings. Well may they long for the line to be completed. Nearly eight years have elapsed since work on it first began, and the terminus is not expected to be reached before the close of 1895. Dividing the distance by 9 gives an average advance of 125 yards per day, which can not be called a brilliant achievement; but brilliant achievements in Africa generally end in few of the achievers surviving.

The gauge of the line is 1 meter (39.37 inches), and the cost of construction has been at the rate of £4,182 a mile. As to the quality of the work, some people consider that it ought to have been better for the money, and others complain of the material, which is all of Belgian manufacture, as being of very poor quality. But when everything bad has been said that is possible and criticism has exhausted itself, there is still plenty of room for all concerned to rejoice and be thankful. Trains are now running regularly over 162 miles of the total projection of 230 miles, and the first load of coffee was brought down a few weeks ago. Before the next crop is ready for transport Cazengo and Golungo Alto will have the permanent way laid straight between them.

Reckoning the milreis at par, we find that the traffic receipts have increased from £3,445 in 1889 to £11,886 during the first six months of 1893, thus declaring an annual revenue of £23,772 before the line has reached the districts for the carriage of whose produce it was mainly planned. And yet the rates are exceedingly reasonable, both for passengers and goods. The third-class travelers are charged less than 1 penny a mile and the second only three times as much, while a first-class passenger and a ton of coffee are considered equivalents, each being tarified at 4 pence. For some kinds of goods, such as building materials, the rate is as low as $2\frac{1}{2}$ pence per ton.

In its latest report the company directs the attention of shareholders to the Loanda customs receipts, which have steadily risen year by year, omitting that of the financial crisis in Portugal, from £38,000 in 1886 to over £142,000 in 1893; and by implication, it takes credit to itself for this very gratifying prosperity. Undoubtedly, enterprise encourages enterprise, but the Government income had been on the increase for three years before the railway earned its first £500. It is

not always the horse that moves the cart, even when the horse is an iron one. To say more for the line than can be indorsed by those who see it in operation is neither wise nor necessary. As a speculation it is good enough to stand on its bare merits, and can not fail to reward its promoters if they will only support a continuance of the economy which was begun under the present management. As an improvement to the colony its value is inestimable, and there is no one worthy of the name of either patron or friend who does not sincerely regret that the company is unprovided with means for carrying the work on to the frontier

KONGO FREE STATE.

In a report to the Department of State, upon the geography and resources of the Kongo Free State, dated March 21, 1895, Commercial Agent Mohun gives the following particulars as to means of transportation:

The Kongo Free State is divided into twelve districts, as follows: Banana, Boma, Matadi, Cataracts, Stanley Pool, Ubaughi-Ouelle, Aruwimi-Ouelle, Equator, Kassai, Lualaba, Kwango, Oriental, and the Arab Zone, which formerly consisted of the districts of Stanley Falls and the administrative region of the Tantanika.

MEANS OF REACHING THE KONGO FREE STATE.

The most direct route is by the steamers leaving Antwerp the 6th of every month and arriving at Boma in twenty-four days. The agents are John P. Best & Co., and Walford & Co., Antwerp.

The other lines are the Afrikanische Dampschiffs-Linie (A. G. Woermann Line), which sends steamers from Hamburg, Germany, every week, stopping at all points on the north and west African coasts, making the passage to Boma in forty to forty-five days.

The Afrikaansche Handels-Vennootschap (commonly known as the A. H. V., or Dutch House), of Rotterdam, which has its own steamers, leaving every three weeks for Banana which is reached in twenty-two days.

The Portuguese Royal Mail Line to San Antonio, opposite Banana, leaves Lisbon every week—twenty-two days to San Antonio.

The Chargeurs Réunis, or French Line, from Havre, and another French line from Marseilles—twenty-four days to Boma.

The African Steamship Company and British and African Steam Navigation Company, Limited, of Liverpool, send their steamers from Liverpool for north and west African ports every week—forty to forty-five days.

The line from Antwerp goes to Matadi, the other steamers only if they get a sufficient amount of cargo.

The first-cabin fare from Antwerp is \$160. The other lines charge the same.

PACKING AND TRANSPORTATION OF LOADS.

The country lying between Matadi (the port for ocean steamers, 80 miles from Banana) and Stanley Pool is very hilly and mountainous, the roads being simply footpaths, and as there are too many rapids in the Kongo River for water transport it is necessary to carry every load on the heads of native porters. To do this successfully requires great care in baling and packing. The bales must not be over 4½ feet long and 20 inches deep, or weigh over 78 pounds; boxes same length and weight. Of course, some pieces of machinery are over this weight, which necessitates two porters to one load. In Europe every bale is first wrapped in waterproof cloth and then baled with bagging stuff and fastened with four iron straps. All boxes containing destructible articles or such things as are destroyed by water are first placed in a zinc box and soldered tight, then in a strong wooden box securely crewed, few, if any, nails being used. Upon the arrival of goods from Europe they are immediately placed in a warehouse to await porters for transport, who are recruited by white agents at Matadi, Issanghila, Lukungu, Manyanga, Luvitiku, also at Kinchassa or Leopoldville, on Stanley Pool. The porters are sent to Matadi from some one of these stations with the ivory and rubber which have arrived from Stanley Pool, and then immediately sent up country with loads of merchandise. For carrying one load they receive pay as follows:

From Matadi to Lukungu:

Pay, 4 pieces handkerchief, at 40 cents.....	\$1.60
Ration, one-half piece handkerchief, at 40 cents.....	.20
	<hr/>
	1.80

From Lukungu to Leopoldville, Stanley Pool:

Pay, 1½ pieces handkerchief, at 40 cents.....	.60
Ration to Leopoldville and return to Lukungu, 2 pieces handkerchief, at 40 cents.....	.80
	<hr/>
	1.40

For each caravan of 12 men, the headman receives as follows:

From Matadi to Lukungu:

At Matadi—	
Pay, 6 pieces of handkerchief.....	\$2.40
1 hat.....	.50
1 parasol.....	.50
Ration, 1 piece handkerchief.....	.40
At Lukungu—	
Ration (to return), 2 pieces handkerchief.....	1.20
Pay, 3 pieces handkerchief.....	1.20
1 parasol.....	.50
1 hat.....	.50
Ration, 2 pieces handkerchief.....	.80
At Leopoldville—	
Ration (to return), 2 pieces handkerchief.....	.80
Total	<hr/>
	9.40

This gives an additional sum of 78 cents to be added to the cost of each load, bringing the total to \$3.98 actual cost per load of 78 pounds' weight from Matadi to Leopoldville. But to this must be added the cost of keeping up the transport stations, seven in number, which would be about as follows, per annum:

2 white officers, pay \$800.....	\$1,600
Food	600
Medicines, house building, repairs.....	200
Voyage from Europe	350
2 negro clerks, pay and food.....	300
40 native laborers, pay and food.....	3,000
Total	6,050

With seven stations, this will amount to \$42,350 per annum. Say 80,000 loads go up every year. This will add to the cost 50 cents per load, with 10 per cent additional for insurance, loss, etc.; bringing the actual cost per load to \$4.90.

On arrival at Stanley Pool, the loads are placed in warehouses, and when steamers arrive they are sent to the different factories. These loads consist of cloth, beads, food, brass rods (in rolls), guns and powder, parts of steamers and machinery of all sorts, zinc roofing, chains, etc.

MEANS OF TRANSPORT ON THE UPPER KONGO.

There are on the upper Kongo to-day the following steamers: *Ville d'Anvers*, *Ville de Bruxelles*, *Ville de Bruges*, *Stanley*, and *Deliverance*, all stern-wheelers, and capable of transporting from 40 to 50 tons each. They also have accommodations for six to eight cabin passengers, and can carry on their lower decks, when half loaded, from 250 to 300 soldiers. These steamers do all the State transportation.

The following are attached to the different stations as "stationnaires": *Ville de Charleroi*, Equator station; *Ville de Gand*, Bangala station; *Ville de Verviers* and *En Avant*, Ubaghi station; *Ville d'Ostende*, Lusamblo station; *Ville de Liège*, Arab Zone; in all, twelve steamers.

The French Government has the following steamers at Brazzaville, Stanley Pool: *Ubaghi*, *Aliema*, *Djoue*, *Faidherbe*, and *Amiral Courbet*.

Mission steamers.—*Peace and Good Will*, Baptist Missionary Society of London; *Henry Reed*, American Baptist Missionary Union of Boston, Mass.; *Pioneer*, Kongo Baolo Mission of London; *Notre Dame du Perpétuel Secours*, Belgian Catholic Mission of Bruxelles, and *Leo XIII*, French Catholic Mission.

Société Anonyme Belge.—*Florida*, *Archiduchesse*, *Stéphanie*, *Princesse Clémentine*, *Roi des Belges*; all stern-wheelers and capable of transporting from 40 to 50 tons each. *Auguste Baernaert*, *Baron Lambertmont*, *General Sanford*, *La France*, *Ville de Paris*, *Seiout*, *Rhône*, *Seine*, *Dumas*, and *Katanga*, smaller boats, but very useful in going into the Kongo tributaries; in all, fourteen steamers.

Dutch House.—*Frederic, Holland, Princess Wilhelmina, and Antoinette,* all stern-wheelers.

In addition to this fleet, the State and trading houses possess many iron whaleboats, cutters, and sailing launches, and also vast numbers of large dugout canoes, which are very useful. All these steamers have a white captain and engineer on board, but their crews are made up entirely of Bangala natives, who have taken to this work very readily and have proven themselves to be the sailors of interior Africa.

August 22, 1892, I left Boma for Matadi on board the State steamer *Prince Baudain* to make arrangements to go to the upper Kongo. Just above Boma the river becomes quite narrow and very deep, and it runs between high hills. At Underhill, below Matadi, the river makes a sharp turn, which makes this point very dangerous. Steamers from Europe pass at least once a week, and so far no accident has occurred, although the whirlpools and countercurrents are very strong.

KONGO RAILWAY.

At Matadi, which is at the head of navigation, is located the main office of the *Compagnie Chemin de Fer du Kongo* (Kongo Railway Company), this being the point of departure of the line to Stanley Pool. I made one or two trips over the line and found that the work was being done in the best manner and that it reflected great credit on the engineers and workmen, who have had enormous difficulties in their way. It is progressing very slowly, as labor is hard to procure. Natives are now beginning to offer themselves, so it is reasonable to suppose that greater progress will be made now than heretofore. Mr. Hector Charmanne, chief engineer at the time, showed me many courtesies. He made the preliminary surveys, and did the hardest work, but was superseded in 1893 by a French engineer, an ex official of the Panama Canal Company.

The line is now open to Kenge Lemba, at kilometer 40 (twenty-fifth mile), and here reaches an altitude of 780 feet. For some miles beyond this the right of way has been cut and the bed prepared to lay rails. The engineering work presents enormous difficulties, as the road lies through a mountainous country, and in view of this, taken with the fact that the climate is exceedingly bad, one can not help being surprised at the rapid and thorough work which has been and is being done.

All material comes from Belgium, but many canned provisions and much salt beef and pork come from the United States. I think that if an agent who could speak French were sent from some of our numerous manufactories of railroad devices he would be able to sell labor-saving machinery, especially that for cutting and digging.

The amount paid engineers, mechanics, clerks, etc., is small and would hardly induce our skilled artisans to apply for work. The ordinary black laborer, from the English settlements on the west coast of

Africa, receives from \$5 to \$15 per month and rations. They are housed and well cared for, have the best food and medical attendance possible, and do no work on Sunday. From what I have seen, I think the company treats its employees with great kindness and consideration. There has been no serious labor trouble so far. The men are well paid and no ill treatment at the hands of white employees is allowed, all questions as to punishment being decided in the courts of the State.

I give below the proposed tariff for passengers and freight when the railway is completed:

Description.	Francs.	Equi- valent in United States money.
<i>Passengers.</i>		
<i>Between Matadi and Ndolo, on Stanley Pool, either way:</i>		
First class	500	\$96.50
Second class	50	9.65
<i>Merchandise per 100 kilos (\$20.46 pounds).</i>		
From Matadi to Ndolo, all merchandise.....	100	19.30
From Ndolo to Matadi:		
Palm-nut clusters, peanuts, and wood for building purposes.....	10	1.93
Coffee	28	5.40
Rubber	43	8.30
Copal-white.....	18	3.47
Copal-red	32	6.18
Palm oil	12	2.32
Ivory	100	19.30
Sesame	10	1.93
Tobacco	27	5.21

THE LOWER KONGO.

The Kongo is navigable for steamers drawing 19 feet, in the dry season, as far as Matadi, which is at the head waters of navigation. In the wet season any draft can be carried, but passing Hells Kitchen, which is a very sharp bend in the river below Matadi, navigation is extremely difficult, as there are numerous heavy whirlpools and the current comes down at the rate of 8 knots. Large steamers have taken as long as two hours to make 200 or 250 feet to get around this bend when the river is high in December. There is no particular danger, as the State has a full corps of competent pilots who know the river thoroughly. At this place the river is about half a mile wide, at Boma 4 miles, and at Banana 16 miles. At Banana there is an excellent harbor in the river capable of taking 27 feet draft. Ships' stores, including coal, can be purchased here from the Dutch House, and a hotel belonging to the Compagnie Magasins Généraux, of Brussels and Boma, affords excellent accommodations for travelers.

At Boma there are two piers some 120 feet in length, one belonging to the State and the other to the Compagnie Magasins Généraux, which afford excellent berths to the ocean steamers arriving.

TRANSPORTATION CHARGES.

Charges for transport on the upper Kongo on steamers belonging to the State, per 1,000 kilograms (2,204.6 pounds), are as follows:

Description.	Francs.	Equivalent in United States money.
For merchandise from Stanley Pool to Boumba (near Itimbiri River).....	300	\$57.90
From Stanley Pool, above Boumba, to Stanley Falls.....	400	77.20
From Stanley Pool to stations in the Oubanghi below the rapids of Zongo.....	350	67.55
From Stanley Pool to the Kassai and its affluents.....	300	57.90
For merchandise sent from an interior station, accessible by steamer, to Stanley Pool:		
Ivory.....	500	96.50
Rubber and other native products.....	200	38.60
All other merchandise.....	150	28.95

Charges for passenger transport on steamers belonging to the State.

UP RIVER.

From Leopoldville, Stanley Pool, to—	Whites.		Blacks.	
	Francs.	Equivalent in United States money.	Francs.	Equivalent in United States money.
wamouth.....	30	\$5.79	7.50	\$1.45
olobo.....	50	9.65	12.50	2.41
ikolela.....	75	14.48	20	3.86
quator.....	100	19.30	25	4.83
ngala.....	125	24.13	30	5.79
oto and Boumba.....	175	33.78	45	8.69
soko.....	200	38.60	50	9.65
nley Falls.....	225	43.40	60	11.58
obo (Kassai).....	200	38.60	50	9.65
ambo (Seukuru and Hassa).....	200	38.60	50	9.65
ngo (Oubanghi).....	200	38.60	50	9.65

DOWN RIVER.

From Stanley Falls to—	Whites.		Blacks.	
	Francs.	Equivalent in United States money.	Francs.	Equivalent in United States money.
o.....	12.50	\$2.41	3.50	\$0.61
ba and Upoto.....	40	7.72	10	1.93
la.....	50	9.65	12.50	2.41
or.....	60	11.58	15	2.90
la.....	75	14.48	17.50	3.38
.....	85	16.40	22.50	4.34
uth.....	100	19.30	25	4.83
lville.....	110	21.23	30	5.79
Lusambo, and Zongo to Leopoldville.....	100	19.30	25	4.83

—Meals and cabins are not included in the above; for the former 15 francs (\$2.00) and for the blacks (96.5 cents) per diem is the usual charge. Each passenger is allowed 60 kilograms of

LIBERIA.

Consul-General Lewis, of Sierra Leone, in a report to the Department of State, November 6, 1885 (printed in Consular Reports, June, 1886, p. 176), gave the following description of Liberia and adjacent territories:

The traveler, sailing from the north along the west coast of Africa, meets first the French colony of Senegal. Here he will witness a degree of political, industrial, and commercial activity which, perhaps, justifies the appellation of "Little France" given to this colony. Railways have been constructed along the coast, and are being extended toward the interior. Telegraphic communication is being established between the coast and interior settlements. About 100 miles lower down the traveler will reach the settlement of Goree, on an island about 4 miles from the mainland. On the mainland directly opposite is situated the comparatively recent and growing settlement of Dakar. Telegraphic and railroad communication exists between Dakar and Senegal. From these three settlements the French are endeavoring to penetrate to the interior, commercially, by the construction of roads and by military enterprises.

Below Goree and Dakar is the British settlement of Bathurst, on the Gambia River, which formerly yielded considerable trade; but, owing to neighboring wars, the trade has fallen off, and what little there is now is largely in French hands. Between the Gambia and Sierra Leone, along about 400 miles of coast and a strip of maritime territory claimed by the Portuguese, are three small French trading settlements established at Rio Nunez, Rio Pangas, and Meelacouri. At the mouth of a small river, called Dubreka, between Meelacourie and Rio Pongo, claimed by the French, the Germans have recently raised their flag in spite of French protestations.

Two hundred miles below Sierra Leone, at the Manna River, begins the Republic of Liberia, extending about 400 miles along the coast to the San Pedro River. This country is, I believe, considered by those who claim to know, the most fertile and productive of all west African countries. Liberia is an interesting instance of American benevolence and foresight. Founded by a philanthropic society having its headquarters at Washington, it has, with its slender resources, accomplished a great work for this part of Africa, and seems to present an inviting field for enterprising black men from America. Many of the people have emigrated from the United States and are more favorable to the extension of American influence in the country than of any other.

From all accounts which I have been able to gather from many people, Liberia is rich in natural resources, and with a slight change in governmental restriction, and with the application of capital, would be unsurpassed in productiveness. In mineral and agricultural capacity it is thought to be without a rival in this part of Africa.

Among its products are palm oil, palm kernels, ground nuts, cocoanuts, cola nuts, camwood, barwood, indigo and other dyes of different colors, red, yellow, and brown; beeswax, india rubber, gum copal, cotton, ivory, rice, indian corn, yams, cassada, sweet potatoes, oranges, lemons, limes, plantains, bananas, guavas, pineapples, papaw, mango, plums, alligator pears, breadfruit, tamarinds, coffee, sugar cane, cocoa, arrowroot, bullocks, sheep, hogs, goats, fowls, etc.

The country seems peculiarly adapted to the successful raising of coffee, and this Liberian coffee has within the last few years acquired, I believe, a reputation very high. The immigrants from the United States, especially in recent years, have been devoting more attention to its cultivation. They are pushing their settlements toward the interior and enlarging their farms.

I have no means at hand for giving a correct statement of the exports and imports of the Republic, but I believe them considerable, and the country easily capable of doubling the present output.

German and English steamers stop every week at some of the Liberian ports, and there are large Dutch establishments.

SIERRA LEONE (BRITISH).

In a report to the Department by Consul Bowser, December 29, 1890, printed in Special Consular Reports, "Streets and Highways," page 540, it is stated that the streets in the colony and city are all alike. "There is an underlying bed of soft, calcareous rock, with various depths of earth, from 3 to 5 feet. The roads are made by digging trenches on each side, and throwing the dirt to the center and leveling; then a top dressing of broken stone completes the street or road. As there are but two horses and one dogcart in the colony the roads are easily kept in repair, when only naked feet tread them. The roads that lead far into the country are nothing more than narrow paths, and all travelers go single file. The cost of maintaining the roads here is in the filling up of some ruts that may be caused by washouts during the rainy season. One can readily see that road and street making are of little expense in this country."

In a subsequent report, dated August 22, 1893, and printed in Consular Reports for January, 1894, page 218, Consul Bowser says:

Goods reach this district direct by sailing ships and by steam vessels via England. They are landed by lighters at wharves and jetties, the ship being moored near by. Warehouses and sheds are provided by the Imperial Government at nominal charges or five days' storage. Goods for the interior traffic are all carried on men's heads or shoulders, in parcels weighing from 60 to 100 pounds. Some goods are carried 100 miles into the interior. Dry goods in bales well hooped and waterproof lined suit the present mode of conveyance.

Consul Pooley, in a report dated June 30, 1894, and printed in Consular Reports for October, 1894, pages 238-245, says:

A chamber of commerce was established in Freetown in 1893, and the British Bank West Africa during the present year. The rate of exchange varies from 1 to 2½ per cent for bills drawn on England. There is also a Government post-office, savings bank, and the post-office money-order system.

There is a weekly and semimonthly mail running between Liverpool and West Africa. All the steamers call at Sierra Leone outward and homeward. In addition to these, there are occasional opportunities for homeward mails via Hamburg and London by British vessels, and via Havre and Marseilles by the steamers of two French lines. The rate of postage is 5 cents per half ounce to all parts of the world.

It is hoped that when the frontier line has been correctly and satisfactorily defined, increased traffic from and to the hinterland will result. It will, however, take no little time to restore confidence and reassure the natives. But perhaps the prospect is more cheering to both races now that, at the instance of the Liverpool Chamber of Commerce, the country has been surveyed by a Government official for a railway from Freetown. Its commencement is looked forward to with much interest by the entire mercantile community of Sierra Leone.

It has been for some time in contemplation to construct a dock for the better accommodation of steamers; but neither this, nor the projected railway, nor even the promised municipality, is likely to mature during the present century.

No records are kept nor tables compiled of the tides, and the only information obtainable is that when it is high water at London Bridge the opposite obtains here.

PROPOSED RAILROAD.

A copy of the Weekly News, of Freetown, Sierra Leone, May 18, 1895, transmitted to the Department by Consul Pooley, contains a report of an address by the governor of the colony before the legislative council, in which he urged the construction of a railroad to develop the resources of the country. The following extracts are taken from the address:

The main trade routes through the protectorate are:

(1) From Falaba by Bafodeya or Bumban, thence to Port Lokko.
 (2) From Matatoka, tapping the Kuniki and the Sanda Lokko countries (the latter in the region of Karriyemma), thence by road to Benkia, on the Rokelle, where the produce is loaded in small canoes and transported to Magbilleh, and thence transhipped in larger ones to Freetown.

(3) From Mongheri through Senahu to Freetown.

(4) From the Upper Mendi districts to Mafweh, Pujehun, and Bandasuma, respectively, thence by waterways to Bonthe, Lavana, Sulima, and Mano Salija.

As to the produce conveyed along these routes:

By the first route, small quantities of ivory and gold from the interior; rubber from the interior, but also from Kuranko; cattle in considerable numbers, cola nuts, small quantities of palm kernels and oil, and rice, chiefly from the districts around Port Lokko.

By the second route, palm kernels, rubber, benniseed, cola nuts, rice, etc.

By the third route, rubber and cola nuts, a little ivory, and a small quantity of palm kernels.

By the fourth route, rubber, small quantities of cola nuts and ivory and large amounts of palm kernels and oil.

Turning to the nature and fertility of the country, I think there is no doubt that the southern portion of the protectorate, which may be divided, roughly speaking, from the northern by an east and west line drawn through Port Lokko is by far the most fertile and productive. In the northern portion, the country lying to the west of the range of the Warra Warra Limba mountains, which extend from Bafodeya to Bumban, is, generally speaking, open grass land with "scrub," well adapted for grazing cattle, but the soil is either light and sandy or mixed with gravelly laterite, and in some parts so little productive as not to be able to raise sufficient rice, which is their staple food, for the inhabitants. To the east of the range, as far as our frontier, the country is richer, especially between Sininkoro and Karriyemma, where it is under forests for the most part, in which the rubber vine abounds, but the valley of the upper waters of the Bagweh, Bagru, and Sehli rivers, which comprehend the Iraiya district, are not productive and are only very sparsely inhabited, and there is a broad belt varying from 20 to 40 miles running along the watershed which forms our northeastern frontier, which was swept bare by the Sofas within the last few years and is reported to be quite uninhabited.

There are no palm trees to the east of the Warra Warra Limba range, and these trees are very scarce to the west of it, and the only district where they grow in very productive quantity is about Maesumbu, where they were noticed by Mr. Bradford during his survey of the line to Bumban.

On the other hand, the southern portion may be said to be throughout rich and productive, especially in oil-bearing palms; the districts about Sherbro and all along the coast are famous for the amounts of oil and kernels which they yield. In some parts of the Bargru district, along the coast, the natives even complain that they are so numerous as to impoverish the land and that they can not in consequence grow rice, but these rich products are not alone confined to the lower districts. The Upper Mendi districts as far north as a line drawn from Mongheri to Kanre Lahun, and the Sana Konno district to the north of that line, abound in palm trees, but only a small portion of the harvest they yield is gathered, in consequence of the distance from a market and difficulty of transport, and, as one chief informed me during my recent tour, because there are not enough people to pick the nuts. Besides, the forests yield rubber and many valuable woods such as kanta and kamwood, which of course can not be utilized owing to the difficulty of transport. In the district lying immediately north of the route from Senahu to Taninahu there are no palms, but at Senahuthere is a rich belt which follows the valley of the Bumpee River.

The principal trade routes which exist from beyond the protectorate are those which enter it across our northern frontier through the French ports at Heimakunu and Wossu. On the eastern frontier between Herimakunu and Kanre Lahun though certain routes cross into our territory, as by Kombili, which is east of Koinadugu, and by Sehamma and thence between the Tinki range and Mount Binsing, practically no trade passes along them owing to the deserted condition of the country bordering both sides of this frontier. From Kanre Lahun, a certain amount of trade is done with the interior at the markets in the Bandeh country, but owing to the chronic state of warfare which exists between Chief Kailundu and the Kissi, Bandeh, and other chiefs, the trade is languishing and intermittent.

Along the frontier on the Liberian side, from Kanre Lahun to the coast at Manoh Salijsa, there is a constant state of warfare, and the southern half of the border districts is a desert.

During my recent tour there appeared to be a great revival of trade with the interior across our northern frontier, and the number of caravans that have come down is unprecedented; but the future prospects of this trade are very uncertain and its continuance can not be counted on, nor have the products which have come down had such an effect as I had anticipated in relieving the depressed condition of the market. Considering how very sparsely inhabited the regions of the upper Niger appear to be, it is possible that the interior trade from that direction is overrated.

The prospects of any trade with the hinterland of Liberia from Kanre Lahun or elsewhere along the frontier are most remote, owing to the chronic state of warfare which exists all along the Liberian borders.

Turning to the consideration of Mr. Shelford's report, my recent tour has more than convinced me of the desirability of projecting the railway through the upper Mendi districts rather than toward Bumban; that is to say, through the southern portion of the protectorate rather than the northern. It must be admitted that the northern portion is on the whole inhabited by a more sober, industrious, and intelligent people, and a people a large number of whom are born traders; but, on the other hand, the soil is less productive and the trade is more or less dependent on the produce which comes from the interior rather than from the soil itself, and the former is, as I have endeavored to show, an uncertain quantity. Again, such produce as does come down, and which, with the exception of the cattle, consists principally of rubber, gold, and ivory, is not of such a bulky nature as the products of the northern portion, which include palm kernels and oil and timber, and therefore its transport would not be remunerative to a railway.

With regard to cattle, it is doubtful whether it would be an advantage to transport them by rail. Again, the northern portion is not so capable, I think, of development by means of settlers as the southern; for, though it possesses higher land toward the east and possibly a more salubrious climate than relatively similar parts of the southern portion, the soil is not so productive, as I have already stated.

On the other hand, there is no doubt that the southern portion, especially that part of it lying to the south of the road which passes from Freetown through Mongheri and Pangoma to Kanre Lahun, is extremely rich in palm oil and kernels; its forests contain large quantities of useful and valuable timber and the rubber vine abounds. Moreover, it appears to me that the southern portion offers the best prospects to settlers from Sierra Leone and the West Indies for the cultivation of coffee, cola nuts, etc., and for trade in timber.

For these reasons I would prefer the railway passing through the southern portion rather than the northern.

Turning to the consideration of the exact route which the line would follow, this could only be determined after a survey by a competent engineer; but during my recent tour I carefully observed the country through which I passed, and am of opinion it should follow the route which leads from Songo Town through Manjehun and Mano to Baoma or Koranko. With the exception of the bridging of the larger rivers, such as the Ribbi and Taia, there appear to be no serious engineering difficulties as regards the configuration of the country. From Koranko my route passed over the range of the Kambui hills to Segbwema, a very hilly and difficult country. But I am informed that this range can be turned by a road which passes from Baoma through Wendeh into the valley of the Moa or Sulima river. This valley once gained there would appear to be no great difficulty in carrying the railway as far as Kanre Lahun. The Ribbi River, which is navigable for steamers of the draft of the Colonial steamer *Countess of Derby* some miles higher up than the point at which it would be crossed by the proposed line, would prove of great service for the transport of materials. The above route, while it would not interfere with the cheap and easy means of transport by the waterways through the lower Mendi and Sherbro districts, would tap the resources of the upper Mendi districts, at present quite undeveloped, owing, as I have already stated, to the distance from a market and the expense of transport.

If there is to be a railway at all, whether in the direction of Bumban or through the southern portion of the protectorate, as I would recommend, I think Mr. Shelford's report shows conclusively the desirability of its commencing at Freetown and running for the first section to Songo Town, from which point it can be diverted in any required direction; therefore, supposing there is to be a railway, the first section to be constructed is that between Freetown and Songo Town, and this work need not be dependent on the determination of the direction the line is to take beyond Songo Town.

With regard to the direction in which it will have to be constructed, Mr. Shelford's estimates for the whole of the main line from Freetown to Bumban, a distance of about 140 miles, the net receipts from existing traffic at £8,333 per annum, and taking the interest and sinking fund for the capital required for the light line at 5 per cent, he calculates that the annual deficit on the working of the railway at the outset will be £14,126. But taking into consideration the greater productiveness of the southern portion of the protectorate, I hope if the line be extended through the upper Mendi districts that an increasing traffic would at once be developed and that there would not be such a heavy deficit from the outset. Besides, these districts, and, indeed, the whole of the southern portion of the protectorate, is more populous than the northern, and a certain amount of passenger as well as goods traffic may be anticipated. Whether the aborigines will take freely to railway traveling is impossible to decide offhand, as the experiment has not been tried in the colony, but we may be able to get information as to the extent to which use is made of the Senegal railway by natives, and this information would be some guide in estimating the amount of passenger traffic that may be anticipated for a line in the protectorate.

With respect to the Sulima line, I was never at any time in favor of it, and it was projected before I came to the colony; and, as appears from the letter from the Crown

agents, the prospects of a remunerative return are so remote I think we need not consider the question of its construction. The estimate for the length of this line, which is about 64 miles, is nearly twice as much as for the main line to Bumban, the length of which is about 140 miles; more than twice as long.

With regard to the nature of line and cost of construction: As it is the opinion of experts that a light line of 2 feet 6 inches gauge is the best adapted for the requirements of this colony, I think their recommendations should be accepted, as well as the estimated cost of construction, viz, £133,767, which, together with a landing pier at Freetown, at £15,000, amounts to £148,767, or say £150,000 in round numbers.

SENEGAL (FRENCH).

The French colony of Senegal, according to the Statesman's Year Book for 1895, includes several stations on the Senegal River as far as Matam, with a certain area of land around each, and the coast from the north of Cape Verde to Gambia. These, with the settled portion of Rivières du Sud, embrace over 14,700 square miles, with a population of 174,000, of whom 135,000 are in Senegal. But included in Rivières du Sud and Senegal are various protected states, which give a total area of 54,000 square miles, with a population in 1891 of 1,100,000. There is a governor-general in Senegal, assisted by a colonial council. The chief town of Senegal is St. Louis, with a population of 20,000. Dakar (population, 2,000) is an important center. At high water the Senegal is navigable for small vessels into the interior.

In 1892 there were 246 miles of railway, 574 miles of telegraph line, 1,022 miles of wire, and twenty-one telegraph offices.

Fruits and grains, oils and gums, india rubber, woods, and skins are the chief exports.

The following information is taken from the annual report of the British vice-consul at Dakar, March 15, 1895:

The population of Senegal consists almost exclusively of a tribe named "Yollops," or "Wollops," though natives of the Gambia, Sierra Leone, etc., as well as of the Soudan and Morocco States, are to be met with. The Yollops are engaged almost exclusively in agricultural pursuits, except at the commercial ports, where a gradually increasing number are employed as boatmen, wharf and store laborers, and fishermen; but even men in these employments retire to their villages as soon as the cool weather ceases to cultivate their crops. According to the information at my command, the carrying trade between Senegal and other parts of the world has been performed as follows: Coastwise trade and with France and French colonies almost exclusively by vessels bearing the French flag. On the other hand, imported goods have arrived in the colony both in French and foreign vessels (with a slight balance in favor of the latter) from other parts of Europe, etc. The same applies to exports (except to France and French colonies). Among foreign vessels, those under the British flag predominate, coal having been imported almost exclusively in British ships.

MADEIRA (PORTUGUESE).

OCEAN LINES.

Union Steamship Company, Limited.—British; 25 vessels, of 63,352 tons and 63,885 horsepower; leave Southampton for Cape Town on alternate Saturdays. Passenger rates: To London, via Southampton, \$61.31; return passage, \$124.08; to Cape Town, \$173.70. Freight, per ton: To London, general merchandise, \$7.37; bananas, \$4.86; to Cape Town, \$12.16. Time of passage: To Plymouth, three and one-half days; to Cape Town, twelve to fourteen days. First-class return tickets from London to Madeira are issued, from May 15 to August 15, at \$76.64.

Castle Mail Packet Company, Limited.—British; 24 steamers, of 41,167 tons and 38,609 horsepower; leave London for Cape Town. Passenger rates: To London, \$61.31; return passage, \$124.08; to Cape Town, \$173.70.

African Steamship Company.—British; 27 steamers, of 43,572 tons and 7,292 horsepower; leave London for west African ports fortnightly. Passenger rates: To Liverpool, \$48.66; return passage, \$73; to Bonny, \$218.97. Freight, per ton: To Liverpool, \$3.65; to Bonny, \$10.95. Time of passage: To Liverpool, six to seven days; to Bonny, twenty to twenty-two days. These steamers call at the Canary Islands; passage to Canaries, \$14.60.

British African Steam Navigation Company.—British; 23 steamers, of 27,241 tons and 5,494 horsepower; leave Liverpool for west African ports fortnightly; all other details same as those given for the African Steamship Company.

Booth Steamship Company.—British; 11 steamers, of 10,708 tons and 1,660 horsepower; leave Liverpool for Para; call at Lisbon once a month. Passenger rates: To Liverpool, \$48.66; return tickets, \$73; to Para, \$97.32. Freight rates, per ton: To Liverpool, \$3.65; to Para, \$9.73. Time of passage: To Liverpool, seven to eight days; to Para, ten to twelve days.

Mersey Steamship Company, Limited.—British; 5 steamers, of 4,023 tons and 775 horsepower; leave London for the Canary Islands. Passenger rates: To London, \$48.66; return tickets, \$73; trip round the Canaries and back to Madeira, \$29.20 to \$38.93. Freight rates, per ton: To London, general merchandise, \$4.27; fruit, \$3.83; pipe of wine, \$5.11; to Canaries, \$3.65. Time of passage: To London, five and one-half to six days; round the Canaries, five to eight days. These steamers run regularly every fortnight from November to May round the Canary group, and are the principal carriers of cargo between Madeira and London.

Afrikanische Dampfschiffs-Actien-Gesellschaft (Woermann Line).—German; 13 steamers of 16,500 tons and 2,419 horsepower; leave Hamburg monthly for West African ports. Passenger rates: To Hamburg

\$48.66; return tickets, \$77.86; to Bonny, \$145.98. Freight rates: To Hamburg, \$4.86; to Bonny, \$10.96. Time of passage: To Hamburg, seven to nine days; to Bonny, twenty to twenty-two days.

Hamburg-südamerikanische Dampfschiffahrts-Gesellschaft.—German; 25 steamers, of 44,413 tons and 8,760 horsepower; leave Hamburg every ten days for Brazil and River Plate. Passenger rates: To Hamburg, \$85.28; to River Plate, \$97.32. Freight rates, per ton: To Hamburg, \$4.86; to Brazil, \$8.52. Time of passage: To Hamburg, seven to nine days; to River Plate, eighteen to twenty days.

Empresa Nacional de Navegação.—Portuguese; 9 steamers, of 11,694 tons and 10,100 horsepower; leave Lisbon on the 6th of each month for the southwest coast of Africa. Passenger rates: To Lisbon, \$27.70; to Mossamedes, \$153.90. Freight rates, per ton: To Lisbon, \$4.42; to Mossamedes, \$12.96. Time of passage to Lisbon, forty-four to forty-eight hours.

Empresa Insulana de Navegação.—Portuguese; 2 steamers, of 1,918 tons and 360 horsepower; leave Lisbon for the Azores on the 22d of each month, returning to Lisbon about the 5th of each month. Passenger rates: To Lisbon, \$25.70; to the Azores, \$25.84. Freight to Lisbon or the Azores, \$4.10 per ton. This line connects with the North German Lloyd and Portuguese steamers for United States ports at St. Michaels, making it a convenient route for reaching Madeira.

T. C. JONES,
Consul.

FUNCHAL, June 21, 1894.



ASIA.

TURKEY.

Two railway lines connect Smyrna with the interior, viz, the Aidin Railway and the Smyrna and Cassaba Railway. Both lines are owned by private companies of foreign capitalists (mainly English), but are under the supervision of the Ottoman Government.

The Aidin Railway extends from Smyrna to Dinair, about 234 miles. The Cassaba Railway runs to Alascheir, about 105 miles. Both lines have one main train track.

The cost of conveyance of goods and the passenger fares depend on the distance. The Smyrna and Cassaba Railway, having recently made a reduction of 50 per cent in passenger fares, has largely increased its income, as the passenger traffic is now three times as large as under the old rates.

OCEAN LINES.

The trade with Europe is carried on in English, French, Italian, Austrian, Russian, German, and Greek bottoms. British steamers carry on the trade between this port and the United States via Liverpool and London, Italian steamers via Naples and Palermo, and Italian and Austrian sailing vessels direct. One or two English steamers run to the United States direct each year during the fruit season.

There are arrivals and departures of steamers to and from the principal ports almost every week.

RIVER AND CANAL TRAFFIC.

The two main rivers of this province are the Meander, in the south, and the Hermus, on the north. Both are navigable only for a short distance. There are no canals, and none are projected.

HIGHWAYS.

The roads are mainly built with earth and broken stone. The only paved roads, with well-built bridges, are those which were constructed by the ancient Greeks and Romans.

J. H. MADDEN,
Consul.

SMYRNA, July 6, 1894.

BAGDAD.

Communication between the vilayet of Bagdad (southeastern part of Turkey in Asia) and foreign parts is provided by caravans and by steamers which navigate the Tigris. The caravans are for intercourse with Persia and the interior countries, and the steamers for communication with Europe, America, and India by the way of Bussorah. It will be of interest to give some details regarding the two companies operating the steamers which navigate the Tigris, their origin, their actual condition, and, finally, the profits which the English company has enjoyed ever since its establishment, as worthy the attention of merchants in the United States, and as a possible incentive to the establishment of a line of American steamers.

The English have the right to navigate the Tigris by virtue of a simple vizirial letter by which the Government originally permitted them to navigate the Euphrates only.

In the year 1830, when Bagdad was governed by the late Ali Pasha, the English, who were seeking a shorter route to India, but with no idea of the building of the Suez Canal, turned their attention to the Euphrates and called it their "future way to India." In order to open this route they applied, by advice of Mr. Taylor, then British consul-general at Bagdad, to the British embassy at Constantinople to obtain a firman permitting them to make an expedition upon the Euphrates. The solicited firman having been refused, the English were content with a vizirial letter which authorized them to place four small steamers upon the Euphrates. They forwarded the vessels in sections to Bagdad (via Alexandretta), put them together, and set them on the water. They were called *Tigris*, *Euphrates*, *Syria*, and *Comet*. The first one was wrecked near Ana, but the other three reached Bagdad, passing through the canal of Massoodee, then in good condition, and continued their way to Bussorah.

At that time there was a small vessel, the *Bender Bark*, which carried on the work of the British consulate between Bagdad and Bussorah. That boat was replaced at first by the *Syria*, and then by the *Comet*, which was under command of Captain Yohnes, and afterwards under command of Captain Selby. Since that time there has always been in front of the British consulate-general a little steamer named *Comet*. Toward the end of 1889 the *Oomet* was replaced by a similar vessel, which is the third of that name. This vessel was furnished with two mitrailleuses, which give her the appearance of a war steamer.

The *Comet* has a captain and an officer of the English marines, with English assistants (under officers); the crews are East Indian soldiers. The steamer is at the command of the consul-general, who has also twelve kawasses and twenty-four Indian soldiers from a Bengal regiment, who continually mount guard at the door of the consulate at his service.

The English company which navigates the Tigris owes its origin to Capt. T. Lynch, who commanded the four steamers brought from Beregik, upon the Euphrates, to Bagdad, and who had a business house at Bagdad in company with his brother, Stephen Lynch. Assisted by another officer, named Holland, the Lynch brothers undertook to form a navigation company. They addressed themselves to London, where they found subscribers for shares. They also offered some shares to the natives, who, understanding the importance of the enterprise, subscribed liberally.

The company built three steamers called *London*, *Tigris*, and *Bloss-Lynch*. The first two having been wrecked, and the third being too small, the company bought the two steamers which are now upon the river, the *Mejidiah* and the *Khalifah*. The company at first encountered serious opposition in the Oman Ottoman Company, which was supported by local authority. The two steamers were obliged during many months to cease taking cargoes, and made trips from Bagdad to Bussorah only for transporting the Indian mails. In the meanwhile Mr. Lynch obtained permission to continue the navigation temporarily, and finally the order was issued from Constantinople under which the steamers of the English company are permitted to ply upon the Tigris.

The Oman Ottoman Company owes its origin to the late Mohammed Rashid Pasha, who brought the two steamers *Bagdad* and *Bussorah* upon the scene during the year 1855.

Namik Pasha, governor general of the vilayet of Bagdad, in the year 1865 procured three other steamers, *Mossoul*, *Phrat*, and *Rassafah*, and Midhat Pasha, who followed him as governor general, increased the number, but he having been called back to Constantinople, the company, from want of proper management, degenerated for some time.

One of the steamers, the *Tellafar*, was burned on the way from Bussorah; others were forced out of the trade, and the company languished in competition with the English corporation until it passed under direction of a functionary of the marine, Amin Bey, who was recently advanced to the grade of pasha for the services which he rendered in the improvement of the condition of the Oman Company. Emin Pasha is now the director.

To-day this company possesses four steamers, the *Bagdad*, the *Mossoul*, the *Phrat*, and the *Rassafah*.

The steamers of the English company, the *Mejidiah* and *Khalifah*, are constructed almost alike. The *Mejidiah* is 216 feet long and 36 feet broad; her engine is 120 horsepower; tonnage, 400, with 4 feet draft when loaded. The *Khalifah* has the same length. Her engine is of the same power and she carries about 50 tons less. The first and second class cabins are the same and in very good condition. The running of these steamers, which carry the Indian mails, is very regular. Every week a steamer leaves Bussorah and Bagdad on fixed days, summer and winter. Each of these steamers takes ordinarily eight or nine days to make the journey.

Passenger rates.

Classification.	From Bussorah to Bagdad.	From Bagdad to Bussorah.
First class (cabin).....	200	150
Second class (cabin).....	150	100
Third class (deck).....	75	65

¹ 1 piaster = 4 $\frac{1}{2}$ cents United States currency.

First and second class passengers have the privilege of dining with the captain, paying daily 8 rupees (1 rupee = 6 piasters).

The freight for gold and silver is three-eighths of one per cent of value, and the captain being charged with the care of bags of money receives one-fourth of the freight which the company charges.

Although the rates for first and second class passengers are so high, it is noticed that the cabins are nearly always filled with pilgrims who come to visit the shrines of Kerbella and Nejef. The deck is never empty; there are 400 to 500 passengers on an average. Passengers are allowed 30 okes ¹ of baggage free, but must pay freight for greater weight.

The Oman Ottoman Company's steamers are very irregular in their trips. On every voyage there is some accident to these old steamers; and were it not for the advantage of the barges trailed with them, they would never pay expenses, which are very small in comparison with those of the English steamers.

The Turkish steamers are all of the same size, 120 feet in length; their engines are of 70 horsepower, and although their passenger rates are more moderate, they have only passengers who are forced to travel upon them. These steamers take twenty days going and coming from Bagdad to Bussorah.

About four years ago the minister of the civil list tried to form a company under the name of Hamidiah, to operate steamers, which was not only to have steamers upon the Tigris as far as Bagdad, but also to render navigable the part of the river from Bagdad to Mossoul, and to restore the navigation of the Euphrates. Rajab Pasha, president of the commission, who directed the affairs of the civil list, also engaged merchants of the country to enter into this enterprise. The English opposed the formation of the company and, after the French engineers sent from Constantinople had studied part of the Tigris, and at the moment when everyone believed the project to be on the point of success, the enterprise fell through, and the English remained sole masters of the river.

The income of the two English steamers *Mejidiah* and *Khalifah*, after deducting the heavy expenses, enables the company to pay a dividend of 15 per cent, besides holding back a good part of the receipts

¹ Oke = 2.85418 pounds.

for a reserve fund. The harbor of Bussorah is much frequented. There are many lines of steamers plying directly between London, Marseilles, and Bussorah, which take, ordinarily, from London to Bussorah, thirty-five days, and from Marseilles, twenty-five days. There are during the exportation season from two to four direct steamers monthly, besides the British India Line, which makes a weekly service between Bussorah and the ports of the gulf and Muskat, Kurrachee, and Bombay. Bussorah has a bright future and its importance increases from year to year.

The journey from Bussorah to Bagdad, in spite of the few villages on the way, is pleasant, and passengers coming from Europe have the advantage of passing through "The Earthly Paradise." This district is very fertile, but the air is rather unhealthy because of marshes in the neighborhood.

Receipts and expenditures of steamers Mejidiah and Khalifah.

RECEIPTS.

Passengers, each voyage:		
Bussorah to Bagdad: 300 tons (234,000 oke ¹), at 5.40 paras ² (29,250 piasters).....		£256
Bagdad to Bussorah: 300 tons (234,000 oke ¹), at 4.40 paras ² (23,400 piasters).....		205
Passengers, each voyage:		
Bagdad to Bussorah		100
Bussorah to Bagdad		200
Passengers and merchandise to intermediate ports.....		100
Receipts of one round trip		861
Assuming there are 60 voyages yearly the annual receipts would be.....		51,660

EXPENSES.

Cost of fuel, at £267 each monthly, for each steamer	£6,408
60 tons per steamer per round trip, 7,200 tons, at 22s. per ton.	7,920
Other expenses for two steamers yearly	3,332
	<u>17,660</u>

Balance

34,000

Freight charges increase sometimes to 10 paras per oke, and the charge of 4 or may be considered as the very lowest in use.

It will be seen that the English company makes good profits. If an American company could be formed to work in harmony with the Oman Steamship Company it would doubtless be repaid. A new company, of the same size as the *Mejidiah* and *Khalifah*, would doubtless find subscribers among the natives. Trade with the United States might be built up in a short time in this region, both in exports and imports.

RUDOLPH HÜRNER,
Vice-Consul.

Bagdad, April 4, 1895.

¹1 oke = 2.85418 pounds.

²1 para = $\frac{1}{4}$ cent United States currency.

SYRIA.

OCEAN LINES.

Although Syria is not directly connected with the United States by any great ocean line for passengers or freight traffic, there are few sections of the globe of more interest to travelers than the Mediterranean coast, and while tourists from the United States now give special attention to passenger lines on the famous Blue Sea, it is hoped and expected that a better acquaintance and the rapidly growing demands of trade will vastly increase the interchange of commercial products between this country and the United States.

The unprotected condition of the Beirut Harbor in the past, due to the absence of any available docks to be resorted to during stormy seasons, has so far prevented large traffic vessels from touching at this port.

The regular traffic lines that carry passengers, through mails, and freight to and from this city are registered as second-class steamers, and carry the French, Austrian, Russian, or Turkish flag. There are steamers of other nationalities that share in the maritime transactions of this port, but they are more or less irregular and need not therefore be discussed.

Although no great through lines visit Beirut and can be reported upon under the head of ocean lines, still the coastwise lines that touch at this place constitute an important element in the trade of Beirut with foreign countries on the Mediterranean, and especially with other ports along the Syrian coast. It is also expected that the new docks, which are likely to be completed within the course of this year, will give a fresh and powerful impulse to navigation in this part of the Turkish Empire.

Compagnie des Messageries Maritimes Françaises.—The steamers of this company belong to and are controlled by a French association, which receives an annual subsidy from the Government of the French Republic for the regular carrying of public mails. Marseilles constitutes the general terminus of the steamers of this company in their double circuits of the Mediterranean, but their actual termini in the Syrian circular line are Alexandria in the south, with Jaffa and Port Said as intermediate points, and Smyrna in the north, with Tripoli, Latakia, Alexandretta, Mersina, Larnaca, and Samos as main ports touched between Beirut and Smyrna.

The total length of the so-called Syrian line is roughly estimated to be 1,352 miles. The distances between the main points touched by the steamers of said company are approximately as follows:

From—	To—	Miles.	From—	To—	Miles.
Beirut	Tripoli	48	Beirut	Jaffa	120
Tripoli	Latakia	63	Jaffa	Port Said	132
Latakia	Alexandretta	75	Port Said	Alexandria	160
Alexandretta	Mersina	63	Total south line.		412
Mersina	Larnaca	136			
Larnica	Smyrna	556			
Total north line.		940			

The condition of the company is considered generally good. Its steamers, though of second-class capacity, are the largest and best boats that ply along this coast. They perform postal and traffic service and make regular trips.

The steamers of the Messageries Maritimes which do the service of the Syrian line are five in number, namely:

Steamer.	Tonnage.	Horse-power.	Steamer.	Tonnage.	Horse-power.
Djemnah	3, 785	2, 900	Senegal	3, 716	2, 900
Iraoudy	3, 785	2, 900	La Gironde	3, 290	2, 900
Niger	3, 726	2, 900			

These steamers accomplish their itinerary weekly, i. e., every other week one of the steamers touches at Beirut, coming from the north, while another steamer crosses way with her coming from the south.

The rates for first-class passengers from Beirut are:

To—	Fare.	To—	Fare.	To—	Fare.
Jaffa	\$6. 76	Tripoli	\$3. 86	Mersina	\$17. 37
Port Said	12. 55	Latakia	7. 72	Larnica	23. 16
Alexandria	21. 23	Alexandretta	12. 55	Smyrna	46. 32

Freight rates vary considerably in proportion to the distance and kind of goods, ranging generally between 96 cents and \$4.83 per ton.

Austrian Lloyds Steam Navigation Company.—This line is controlled by an Austrian company. Trieste is the terminus of the steamers in the Mediterranean, but the Syrian line ends at Alexandria in the south, with Haifa, Jaffa, and Port Said as intermediate ports; and at Constantinople in the north, with Larnica, Limasol, Rhodes, Khios, and Smyrna as intermediate points, besides Alexandretta, Mersina, Mitylene, Dardanelles, and Gallipoli, which are touched by the Syria-Caramania line.

The total distance from Alexandria to Constantinople, by the Syrian line, run by the steamers of this company, is nearly 1,652 miles, and by the Syria-Caramania line about 1,800 miles.

The distances between the main intermediate points will be seen on reference to Messageries Maritimes line of steamers.

The material condition of the steamers of the Austrian Lloyds Navigation Company is not so good as that of the vessels of the Messageries Maritimes Line. The Austrian Lloyds steamers are smaller, and, although they carry mail, passengers, and freight, they are neither so punctual nor so fast. There are no special steamers which do the service of the Syrian line.

The sailings of these steamers are weekly.

The first-class passenger rates, with meals, from Beirut are :

To—	Fare.	To—	Fare.	To—	Fare.
Haifa	\$5. 79	Limsaol.....	\$8. 59	Smyrna	\$35. 17
Jaffa	6. 27	Rhodes.....	23. 16	Mitylene.....	41. 15
Port Said.....	13. 03	Khios.....	30. 68	Dardanelles.....	45. 36
Alexandria.....	20. 26	Alexandretta.....	9. 17	Gallipoli.....	45. 64
Larnica.....	6. 28	Mersina.....	13. 17	Constantinople.....	52. 11

The freight rates, as in the case of the French steamers, vary considerably, but the minimum rate is 6 francs (\$1.158), and the maximum, 15 francs (\$2.89½) per ton, according to the distance and the kinds of merchandise.

Compagnie Russe de Navigation à Vapeur et de Commerce.—This company belongs to a Russian corporation, and it receives a subsidy from the Russian Government for the postal service. Odessa is the terminus of this line of steamers. The Syrian line, however, begins at Alexandria, in the south, with Jaffa and Port Said as intermediate points, and ends at Constantinople, in the north, with Tripoli, Smyrna, Piraeus, Salonica, and Dardanelles as the intermediate ports.

The total length between these two points and the intermediate ports is nearly as already stated. It is worth observing, however, that the steamers of the Russian Company do not touch at Cyprus or Rhodes, nor at any other port of the Caramanian littoral. The condition of the steamers of this company is much like that of those of the Austrian Lloyds Company; but, though small, they are generally preferred by tourists to others, except the boats of the Messageries Maritimes.

The Russian steamers performing the service of the Syrian line are three in number, namely:

Name.	Tons.	Horse-power.
Korniloff.....	3, 800	1, 000
Odessa.....	3, 000	900
Lasareff.....	3, 400	800

The steamers of this line call at Beirut weekly.

First-class passenger rates, including meals, from Beirut are:

To—	Fare.	To—	Fare.	To—	Fare.
Jaffa.....	\$4. 25	Tripoli.....	\$3. 09	Salonica.....	\$46. 82
Port Said.....	11. 58	Smyrna.....	33. 53	Dardanelles.....	51. 72
Alexandria.....	19. 30	Piræus.....	35. 51	Constantinople.....	54. 81

Freight rates range from 6 to 15 francs (\$1.158 to \$2.89½) per ton, according to distance and kind.

Compagnie des Paquebots Poste Khédivé.—This company belongs to and is controlled by the Government of the Khedive of Egypt. The termini of the trips of the steamers of this company are Alexandria, with Port Said and Jaffa as intermediate ports in the south, and Mersina, with Tripoli and Alexandretta as intermediate ports in the north. The total length of the line is 797 miles, while the distances between the different ports visited by the Khedivial steamers are as shown in the list given under the head of the Messageries Maritimes line. The good condition of the steamers of this company together with their regularity, comfort, and the facilities afforded to trade have made them very popular in Syria. They carry mails, passengers, and freight. Four steamers are doing service in the Syrian line, viz:

Name.	Tons.	Horse-power.
Buheira.....	1, 080	300
Rahmanieh.....	1, 300	200
Faium.....	1, 070	300
Sharkieh.....	1, 160	300

The sailings of these steamers are weekly. The first-class fare is as follows from Beirut:

To—	Fare.	To—	Fare.	To—	Fare.
Jaffa.....	\$4. 28	Alexandria.....	\$20. 07	Mersina.....	\$15. 06
Port Said.....	15. 55	Tripoli.....	2. 90	Alexandretta.....	15. 06

Although Alexandria is nearer to Beirut than Mersina, the fare to the former is higher on account of the fact that these steamers go first to Mersina, then return to Alexandria, which makes the circular line longer. The freight rates on the steamers of this company are about the same as those of other companies.

RAILROADS.

While no railroad is now in operation in Syria, work is progressing on two lines—one from Beirut to Damascus and the Hauran, and the other from Haifa through the Hauran to Damascus. The affairs of the latter are now languishing after the completion of several miles of track and the survey of the entire route, but the work on the line from Beirut to Damascus is being pushed with the energy characteristic of

French engineers and with the ample means commanded by a wealthy corporation of French and Syrian capitalists. The branch of this road from Damascus to the Hauran, 64 miles, is already finished, and will be operated for transporting this year's grain crop from that rich section to Damascus. The main line from Beirut to Damascus is laid in many sections near Beirut, and the grading, leveling, and bridge building are fast approaching completion on the entire 77½ miles. The track will be finished and the line ready for full operation some time during next year.

The tremendous grades over the Lebanon Mountains are such that this great work has been unavoidably delayed, and it is as yet impossible to determine the exact date of final completion, but it is hoped that by the spring or summer of 1895 passengers and freight can be transported over the Lebanon Mountains. The line itself is a narrow gauge or tramway, but the grading is wide enough for the standard roadway, and the ultimate intention is to make it conform and connect with the standard-gauge branch of the same company from Damascus to the Hauran.

The official name of this new railway is "The Ottoman Company of Economical Railroads from Beirut to Damascus," and it has a concession of ninety-nine years from the Sultan. The main line from Beirut to Damascus is 77½ miles and the branch from Damascus to the Hauran (already finished) is 64 miles. Other branch lines to Hama, Hama, Baalbeck, and Aleppo are contemplated, to form in time a part of a grand railway system from Beirut to Bagdad and the Euphrates Valley. The company's capital stock is 10,000,000 francs or \$1,930,000, divided into 20,000 shares of 500 francs (\$96.50), and the corporation has the power to issue bonds if needed.

It is stipulated in the concession that the work must be completed in four years. It was commenced on December 8, 1892. Interest of 5 per cent is paid to shareholders. Not only is all the iron and material for the road on the ground, but the engines, cars, and general mechanical equipment are already arriving in the port of Beirut. There is only one track on the line, with sidings at termini and stations. No schedule of passenger and freight tariffs has as yet been made out.

HIGHWAYS.

There are no navigable rivers or canals in Syria, but the Damascus road is one of the most famous macadamized highways in the Turkish Empire. It is doubtful if there is a better, smoother, or more beautiful roadway in Europe or America. Constructed by the French after the great massacre of 1860, it has been maintained by a French company ever since as a pleasant highway between Beirut and Damascus, and is an immensely profitable investment. Its total cost was 3,000,000 francs (\$579,000), and an annual outlay of \$20,000 is made for repair, the road being practically renewed every three years.

It is used for passenger and freight traffic, diligences making two trips daily the year round in thirteen hours, from both Beirut and Damascus, for the convenience of passengers; and carriages and caravans increase the travel and popularity of the highway. From twenty-five to thirty freight wagons a day and many camels and donkeys transport the heavy freight shipments between the two great Syrian cities. The length of this perfectly macadamized highway is 113 kilometers, or 70½ miles, about the same as the railway, which follows the general grade and direction of the roadway. The two lines are practically owned by the same corporation. The condition of this roadway is perfectly maintained at all times, and even in the severest snow-storms the road on the mountain tops is kept free from drifts by the employment of hundreds of men, shovels, and carts. Both the Lebanon and Ante-Lebanon mountains are crossed at a height of fully 5,000 feet, the immense grading over two mountain ranges in about 70 miles' distance can be easily conceived. This route is historic and picturesque. A branch of this great highway, about 20 miles in length, extends from Tyra, at the eastern base of the Lebanon Mountains, past the interesting city of Zahleh and alongside the reputed tomb of Noah, to Baalbek, the most artistic and wonderful of all ancient ruins in this section of the Orient.

The Damascus roadway averages 6 meters (19.7 feet) in width, and for 17 miles outside of Beirut and Damascus it is well watered in the season. The diligence fare for first-class seats is \$6.38, and for second-class, \$4.44, while private carriages from Beirut to Damascus cost 4.27 for the round trip, which occupies three days. The freight rates from Beirut to Damascus vary between \$1.32 and \$3.52 per ton, an Arabic standard of weight equivalent to 560 pounds.

THOMAS R. GIBSON,

Consul.

UT, June 1, 1894.

PALESTINE.

OCEAN LINES.

The principal seaport within the province of the Jerusalem consulate is Haifa.

Eight steam navigation companies have agencies here. The principal ones are these companies make regular trips to and from this port. The companies are known as (1) Austrian Lloyds, (2) Messageries Maritimes, (3) Russian Steam Navigation Company, (4) Khedive, (5) P&O, (6) Bell's Asia Minor, (7) Knott's Prince Line, and (8) The British India Company. Each of these companies is a private corporation, yet under the control of its respective government to the extent of its contracts for carrying the mails, being subsidized for this purpose.

Austrian Lloyds.—The Austrian Lloyds, with headquarters at Trieste, has a fleet of seventy-two screw steamers. Twenty-four of these are modern and have each a capacity of from 2,000 to 4,000 gross tons and from 1,500 to 4,000 horsepower. The other two-thirds of the fleet are old-style vessels, though in good condition and in continual use. Their gross tonnage is from 500 to 1,800 tons each and their horsepower from 300 to 1,400. Some of the larger steamers will accommodate about 100 first-class and 40 second-class passengers.

Besides the Mediterranean, Adriatic, Levant, and Black Sea lines the Lloyds Company has a service to India, China, Japan, and South America.

The lines in operation on the Mediterranean run weekly steamers from Trieste to Constantinople, Alexandria, Piraeus, Smyrna, Salonica, and Constantinople; and fortnightly to Constantinople, Smyrna, Beirut, Jaffa, Alexandria, and Alexandretta.

Thus, by an Austrian Lloyds steamer, one could ship freight or go as a passenger north or south once a week. A choice of routes going north is given, viz, by the Straight Line, via Cyprus, or the Caramania Line, the former taking six and the latter eight days to reach Constantinople. The points touched by the Straight Line are: Jaffa, Beirut, Larnaca, Limasol, Rhodes, Khios, Smyrna, and Constantinople. The points touched by the Caramania Line are: Jaffa, Kaifa, Beirut, Alexandretta, Mersina, Rhodes, Khios, Smyrna, Mytilene, Dardanelles, Gallipoli, and Constantinople. The Lloyds guide books do not give the distances between these points.

Single first-class passage from Jaffa is as follows: To Constantinople, \$63; to Alexandria, \$17.40; Trieste, via Alexandria, \$78.50; to Trieste, via Smyrna, \$120.

The Lloyds Company distinguishes four classes of freight and charges accordingly from Jaffa to Alexandria and Trieste, viz:

Class.	To—		Class.	To—	
	Alexandria.	Trieste.		Alexandria.	Trieste.
First.....	Per ton. \$8.40	Per ton. \$21.00	Third.....	Per ton. \$4.80	Per ton. \$12.00
Second.....	6.80	16.00	Fourth.....	2.80	7.00

It must be noted, however, that rates charged by all the coast lines doing business here are liable to great fluctuations under certain conditions.

Messageries Maritimes.—This company has its head offices in Marseilles, and has lines to India, China, Cochin-China, Australia, New Caledonia, East Africa, South America, the Black Sea, and the Mediterranean. It has a fleet of fifty-five screw steamers, two-thirds of which are reckoned as large-sized, having a displacement of from 3,000 to 7,000 tons each, and from 2,000 to 7,000 horsepower. The Messageries steamers touch at Jaffa weekly. Line A leaves Marseilles fort-

nightly, going via Piræus, Salonica, Smyrna, Samos, Larnaca, Mersina, Alexandretta, Latakai, Tripoli, Beirut, Jaffa, Port Said, Alexandria, and Marseilles. Line B leaves Marseilles fortnightly, going via Alexandria, Port Said, Jaffa, Beirut, Tripoli, Latakai, Alexandretta, Mersina, Samos, Smyrna, Salonica, Piræus, and Marseilles.

The Messageries Maritimes Company is the only company that seems to have calculated the distances between its ports. According to its guide books, the distance from Marseilles to Egypt, Syria, and return is 4,300 miles. Passenger and freight rates are as follows:

From Jaffa to—	Distance.	First-class passengers.	Freight (per ton).		
			First class.	Second class.	Third class.
	<i>Miles.</i>				
Alexandria.....	392	\$16. 00	\$5. 00	\$4. 00	\$3. 00
Marseilles.....			20. 00	12. 00	8. 00
Via Alexandria.....	1,700	74. 00			
Via Piræus.....	2,600	108. 00			

Rates, owing to severe competition, are sometimes reduced to 50 per cent of the above figures.

The steamers of this company are renowned for punctuality, neatness, and general good treatment of passengers.

Russian Company.—The Russian Steam Navigation and Commerce Company has its headquarters in St. Petersburg. It has a fleet of thirty-six screw steamers, varying in size from 200 tons and 300 horsepower to 7,000 tons and 3,400 horsepower. The average passenger capacity of these steamers is 40 first-class and 30 second-class berths. They visit Jaffa once a week, on fortnightly round voyages. The points touched are Odessa, Constantinople, Dardanelles, Mount Athos, Salonica, Piræus, Khios, Smyrna, Tripoli, Beirut, Jaffa, Port Said, and Alexandria. On the return trip, they make these same ports in reverse order.

Freight and first-class passenger rates are as follows:

From Jaffa to—	First-class passengers.	Freight (per ton).		
		First class.	Second class.	Third class.
Alexandria.....	\$18. 60	\$5. 00	\$3. 60	\$2. 50
Odessa.....		18. 00	10. 00	8. 00
Via Alexandria.....	81. 60			
Via Smyrna.....	112. 00			

Reductions on these rates are to be obtained at certain times under certain circumstances. These are, however, the published tariffs.

The following table will show the part each of the above-named companies has in the movements of navigation during one month at the port of Jaffa:

Company.	Steamers arriving and departing.	Remarks.	Company.	Steamers arriving and departing.	Remarks.
Austrian Lloyds...	8	Service regular.	Faber (French)....	1 or 2	Not very regular.
Messageries Maritimes.	4	Do.	Bell's Asia Minor.	1	Do.
Russian Company..	4	Do.	Knott's Prince	1	Do.
Khedivé	8	Regular service between Alexandria and Messina.	Line. Machsussieh (Turkish).	1	Do.

The Khedivé is a thriving company, whose competition the others feel. The Faber, Bell, Knott, and Machsussieh lines are seldom used by travelers.

RAILWAYS.

Within the province of the Jerusalem consulate there is but one railway. This connects Jerusalem, the chief city, with Jaffa, our only seaport. This road, called Chemin de Fer Ottoman de Jaffa à Jerusalem, while holding title from the Turkish Government, is in reality a French corporation. It is the policy of the Turkish Government to keep a nominal control over all railways and highways within its territories.

The total length of this railroad is 53 miles; it is single track and narrow gauge. Stations average 9 miles apart, there being five between Jaffa and Jerusalem. None of the intermediate stations are of any importance.

The line is in fair condition, but the accommodations for passengers are very bad, and would not be tolerated by the traveling public of Europe or the United States. The line is difficult to keep in first-class condition owing to the heavy grades and short curves among the mountains. With the means at hand, the company is to be commended for its success in keeping the roadbed in as good condition as it is. In the distance of 53 miles the ascent is nearly 2,500 feet, most of which is made during the last half of the distance.

The daily service consists of one passenger and one freight train each way. The first-class fare between the termini is \$3. A round-trip ticket is sold for \$4.

Freight is divided into three classes. The rates per ton from Jaffa to Jerusalem are \$3.90, \$3.50, and \$3, for first, second, and third class, respectively.

HIGHWAYS.

There are three carriage roads branching from Jerusalem that are worthy the name of highways, viz, one leads westward to Jaffa, one southward to Bethlehem and Hebron, and one eastward toward Jericho.

This latter is not completed. A highway also runs from Jaffa northward to Tautura. These roads are in good condition, but there is so little carriage traffic over them that it requires little attention to keep them in order. Their average width is about 50 feet. All other roads through the country are but mountain trails, and wretched beyond description. All travel is on horse, camel, or donkey back, likewise all transportation of goods to and from the larger towns and villages of the north.

EDWIN S. WALLACE,
Consul.

JERUSALEM, *June 16, 1894.*

MASKAT.¹

OCEAN LINES.

The only line of steamers carrying passengers, mails, and freight, calling regularly here, is the coast line of the British India Steam Navigation Company, Limited, running from Bombay and Karachi² to Maskat and ports in the Persian Gulf, with Bassorah, Asiatic Turkey, as the terminal port. These steamers leave Bombay every Thursday and remain at Karachi until arrival of same company's (Peninsular and Oriental) steamer with mails and passengers from Brindisi. They leave Karachi on Tuesday morning. At Maskat, the steamers call every alternate Thursday, going to Bassorah, and every other Thursday on the return voyage.

The British India Steam Navigation Company, Limited, London, own 101 steamers, the total tonnage of which is 249,492.

The following are the steamers of this company at present on the Persian Gulf line:

Name.	Gross tonnage.	Nominal horse-power.	Name.	Gross tonnage.	Nominal horse-power.
Assyria	1,495	200	Kilwa	1,552	200
Chanda	2,022	221	Pemba	1,536	200
Java	1,477	180	Simla	1,615	180

¹ Also written Muscat.

² Also written Kurrachee.

First-class passage rates in rupees.¹

From—	To—								
	Karachi.	Gwadur.	Maskat.	Jask.	Bandar Abbas.	Lingah and Bahrein.	Bushire.	Fao and Fallahi.	Basorah.
Bombay.....	60	86	105	120	128	143	180	195	210
Karachi.....		38	75	90	105	120	150	165	180
Gwadur.....			53	68	83	90	128	143	158
Maskat.....				30	56	64	106	120	124
Jask.....					30	53	90	105	126
Bandar Abbas.....						38	68	83	90
Lingah and Bahrein.....							53	75	83
Bushire.....								26	34
Fao and Fallahi.....									20

¹ The rupee, silver, was valued by the United States Treasury Department as follows, on the dates given: 1894, January 1, 24.5 cents; April 1, 22.1 cents; July 1, 21.7 cents; October 1, 22 cents. 1895, January 1, 21.6 cents; April 1, 21 cents.

This table will also serve to show the ports on the Persian Gulf touched at by the mail steamers.

Average rates of freight are 10 rupees per ton of 20 hundredweight, or 40 cubic feet, to all ports.

Specie is charged at from three-fourths to one-half of 1 per cent, according as value is small or great.

The mail steamers on the Persian Gulf line receive a small annual subsidy from the British Indian Government.

RAILWAYS, RIVERS, AND HIGHWAYS.

There are no railways or navigable rivers in Oman, and no canal lines or roads have been constructed in this country. There are no wheeled vehicles in use; passengers and goods are conveyed by camel or donkey along narrow tracks worn by the animal's feet.

A. MACKIRDY,
Vice-Consul.

MASKAT, *May 9, 1895.*

PERSIA.

ANCIENT ROAD AND BRIDGE BUILDERS.

In surveying the lines and means of communication for the conveyance of travelers and merchandise, as now existing in Persia, we find ourselves face to face with conditions, methods, and systems—almost unchanged since the very dawn of history—which have survived dynastic revolutions, the overthrow of social and religious institutions, and the contraction and expansion of political frontiers.

In the course of her long existence Persia has experienced to the full the vicissitudes of empire; but whether Assyrian, Scythian, or Median; whether Greek, Roman, or Arab has striven to control her destinies;

whether the offering of fire has flamed from the altars of Zoroastrian temples or the priest of Islam calls the faithful to prayers from the minaret of the mosque, all seem to have agreed that in the means of both internal and external intercourse no change was necessary.

At certain periods of Persian history, architecture, sculpture, engineering, and building attained a high state of perfection, and palaces and bridges, and dams thrown across rivers for preserving and raising the water for the purposes of irrigation, attest the possession of remarkable skill and perseverance on the part of the promoters and builders. Not though large sums of money must have been spent and vast numbers of people employed in raising these structures, comparatively little attention seems to have been paid to roadmaking.

The unconfined tracks, without landmark or guidepost, tending in one direction with more or less irregularity, and made visible by the useless tramp of the truck animals, form the highways, and the camel, mule, the horse, and the ass, the ordinary vehicles of transport, and the caravansary and chapar-khaneh (posthouse) are the resting places for man and beast.

The little attention paid by the Persians of ancient and mediæval times to roadmaking was no doubt partly owing to the general absence of wheeled carriages, both in commercial enterprise and local industry, the more ambitious schemes of war. It appears, however, from rock sculptures at Persepolis that a small two-wheeled vehicle did exist in those remote times, but it would seem from the surroundings it was used rather in domestic than in warlike pursuits.

In primitive times, when the boundaries of states were but ill-defined and the executive or governing power, which not infrequently decreased in proportion to the distance from the center, mountains formed at the same time both the limits of the kingdom and its bulwarks of defense. It is, therefore, not surprising that the Persian mountains have afforded so few traces of ancient roads or roadmaking.

In the mythological ages, moreover, superstition and dread peopled vast solitudes with giants, demons, and genii, whose presence in their neighborhood it was prudent to avoid, and in later times their caverns afforded safety and protection to bands of robbers, who preyed on the richly laden and defenseless caravans in the plains.

It is probable that these and a variety of other considerations had the effect of retarding, through long periods, the construction of roads, and of hindering traffic and merchandise to find their means of increase and distribution the best way they could.

During the reign of the present Shah considerable improvements have been made in certain districts where the ordinary traffic was carried on under great difficulties and dangers, and although the pack animals are not yet superseded, transport and travel have been much facilitated. It is true that they are of local rather than international

interest and advantage, yet they mark an advance in the right direction, and demonstrate that the ruler and his advisors desire to give a freer and smoother circulation to the products and industries of their own country. There are, however, two comparatively new roads, which, as they have more than a local interest, will, in their proper place, require separate mention.

In reviewing the past and present condition of the historic kingdoms of the East, whose inherent vitality has preserved them from the processes of natural and unnatural decay and extinction, and whose laws, customs, and habits, which have been made sacred by their associations and antiquity, and even in the fierce and feverish light of modern times command our sympathy and curiosity, it must be admitted they have many and weighty reasons for moving slowly and carefully in the way of improvements.

The roads of Persia, with the exceptions mentioned above, are generally of one complexion and in much the same condition. Variations in the surroundings of mountain, ravine, or plain have each their peculiar features, yet in spite of these there is a close family likeness in all. Their one peculiarity when confined to the plains is a great number of parallel cattle tracks of undefined extent. Even when the road leads through cultivated lands it is considered advisable and economical to allow the caravans a pretty large margin. The roadway, therefore, may be half a mile or only a few yards wide. In mountain passes it is often confined to one single track, where it is impossible for the animals to pass each other. The roads which have been constructed under the auspices of the present Shah in mountainous districts bordering on and in the province of Mazenderan are from 10 to 12 feet wide. These have been very useful in facilitating and stimulating the local trade in rice, timber, and charcoal, and also in promoting the growth of trade with the small port of Meshedi-sar, on the Caspian, about 70 or 80 miles west of the more important town of Astrabad.

It would be difficult to assign any distinct period for the erection of those vast structures of antiquity, of which the ruins of Persepolis remain as a proof of the engineering and artistic skill of the builders. These are remnants of an age too remote to exercise any influence whatever upon the present. They can only have a historical and archaeological interest for the antiquarian and the traveler.

The Sassanian dynasty, the last of the ancient lines of Zoroastrian kings who occupied the throne of Persia from about A. D. 226 to A. D. 650, or upward of 400 years, devoted much attention to the building of bridges and the construction of dams and other works of public utility for the benefit of their subjects and the prosperity of their kingdom.

THE CARAVANSARY BUILDERS.

The Saffavian kings, who reigned over Persia from toward the close of the fifteenth to the beginning of the eighteenth century, a period of

nearly 250 years, recognized the necessity, and considered it a pious duty, to provide shelter, protection, and refreshment to men and animals compelled at all seasons of the year to traverse the lonely and dangerous highways. They were the great caravansary builders, and such was the interest they took in the erection of these buildings that both sexes joined in the enterprise. Many of these caravansaries, specially those erected by Shah Abbas the Great, who died in 1628, are still standing. They are mostly built of hard-burned bricks, and have resisted the destructive influences of time, weather, and neglect with remarkable success. It is, however, but just to remark that a great many caravansaries have been built in different parts of the country, both from public and private sources, since those days.

There is little variety in the architecture of these necessary, but not always comfortable or convenient, habitations. They are always in the form of a quadrangle, three sides of which are usually taken up by stables and the fourth side by rooms for travelers, storerooms, &c. The middle of the square is generally occupied by a large covered tank for the supply of water to men and animals.

Caravansaries exist along all the principal highways, at varying distances of from 16 to 24 miles apart, and form the ordinary stages or halting-places of the caravans. As it is necessary that they should be in more or less close proximity to villages, from where a supply of food can be obtained for the animals, this partly accounts for the difference in the number of miles in the stages. Sometimes other stages operate, as in more highly civilized countries.

The accommodation of the caravansary is not very refined, and seldom tempts the traveler to stay longer than is necessary for rest and shipment. Those, however, to whom time is of little moment and who take a good supply of household furniture with them, will find a comfortable residence in a caravansary, if not an absolute pleasure, at least a necessity. The bill of fare is always a very moderate one, consisting of bread and eggs, but those who know the resources of these primitive roadside inns generally provide themselves with a few supplementary articles.

POSTHOUSES.

Besides the ordinary caravansaries, each great road of public or national importance has a system of posthouses. These are generally in the vicinity of the caravansaries and at about equal distances apart. In these places relays of rather small, wiry horses are kept, and if the traveler's patience is not equal to the slow monotony of the caravan, he can be furnished with supplies of horses, and with courage and endurance he may cover from 60 to 100 miles a day. The cost of one horse is, at the present time, about 2½ cents a mile. But as, by the ordinary necessities of this service, the traveler must be accompanied by a postboy, or rider, he is obliged to take two horses, which increases the cost to about 5 cents a mile.

The accommodation at the posthouses is more comfortable than at the caravansaries, although the bill of fare does not offer any greater variety.

HIGHWAYS.

Teheran is connected with the outer world by fine roads, from which, as will be seen presently, there are certain branches of more or less importance. These form the ordinary lines of communication for the transport of goods and the conveyance of passengers and mails, and may be briefly stated as the Tabriz, Hamadan, Bushire, Meshed, and Astrabad roads.

TABRIZ ROAD.

Teheran to Kasvin, 6 stages, 96 miles.—This road was constructed for wheeled vehicles about sixteen years ago. It is about 50 feet wide, and, as it lies generally over a gravelly bed, macadamizing was unnecessary. For ten months in the year it is in good condition. During January and February, on account of the heavy falls of snow, the traffic is sometimes delayed. Conveyances for the carriage of travelers and mails, consisting of closed and open spring vehicles, and small covered and uncovered wagons, all drawn by horses, are kept in readiness both in Teheran and Kasvin, but not at the intermediate stations. The fare for the closed spring carriage with four horses, sufficient for two or three persons, is about \$17; for the open spring carriage with three horses, for two persons, \$12.50, and for the wagon and three horses for two persons, \$7.50, for the whole journey. Wagons for the conveyance of the traveler's baggage, to accompany the carriage, can also be had. The transport of goods by wheeled carriage is only carried on to a limited extent. The road is worked by a private individual, who is at the present time governor of Kasvin.

Kasvin to Zenjan, 5 stages, 104 miles.—Road generally level.

Zenjan to Tabriz, 5 stages, 104 miles.—About 50 miles from Zenjan the road crosses a range of hills of considerable altitude, called the Goflan Kuh; with this exception the road presents no difficulties. Wheeled vehicles can traverse the whole distance from Tabriz to Teheran, but on account of the hills above mentioned, the ordinary pack and riding animals are preferred.

Tabriz to Julfa, on the River Aras, Russian frontier, 4 stages, 80 miles.—The road is fairly level and passable for wheeled carriages. Travelers from Julfa for Europe take the Russian mail-cart service to a station on the Tiflis-Baku Railway, called Agstaffa, about 100 miles southeast from Tiflis.

Tabriz to Damadim, Turkish frontier, 8 stages, 226 miles.—This road presents no serious difficulties, but all traffic is carried on by pack animals. Camels are largely used on this road. All European goods (Russian excepted) are imported by this route via Trebizonde, on the Black Sea, for the northwest, as well as large quantities for Kasvin,

Teheran, and other places. A transit duty of 1 per cent is charged at Trebizonde on all goods en route for Persia.

From Tabriz to Oroomiah distances vary slightly, according as the south or the northeast of the lake is chosen, but the distance is, more or less, about 130 miles. If some small steam craft could be launched on the lake, and a waterway opened up between the two towns, a great saving of time and fatigue would be effected.

Branch road.—Kasvin to Resht, 6 stages, 120 miles: The second, third, fourth, and most of the fifth stages from Kasvin lie across the Elburz, with its offshoots and neighboring ranges of mountains. Although the passes are often very steep and the road frequently overlooks deep precipices, comparatively few accidents occur to either men or animals, on account of the width being seldom less than 10 feet. A concession was granted by the Shah last year to a Russian syndicate to construct a cart road from Kasvin to Resht, but a beginning has not yet been made, although it is reported that operations will be commenced in two or three months. The majority of Russian goods, particularly sugar, are transported to Teheran by this route. This, moreover, is the most direct trade route to all parts of Europe, but on account of the prohibitive transit duty levied on all goods passing through Russia from the east, it is but very rarely used.

HAMADAN ROAD.

Teheran to Hamadan, 8 stages, 172 miles.—This road, although in places hilly and presenting a more or less uneven surface, offers no serious obstacles to the free and regular transport of goods. The principal business of Hamadan is the tanning of leather.

Hamadan to Kermanshah, 5 stages, 120 miles.—With the exception of a few hills of no great height above the level of the plateau, this road is an undulating surface. The well-known rock-sculptures on the west of the mountain called Bi-situn are at distances of about 8 miles and 4 miles west of Kermanshah, in more or less close proximity to the

Kermanshah to Khanakin, Turkish frontier, 7 stages, 132 miles.—Part of the road lies over wooded hills, but to the ordinary animal carriage there is no insuperable difficulty. From Khanakin to Bagdad, on the west (Turkish territory), the distance is about 112 miles.

TEHERAN-BUSHIRE ROAD.

This road lies directly south and passes through the important cities of Shiraz and Bushire. The celebrated ruins of Persepolis and the famous rock sculptures are in the immediate vicinity of this road, 40 miles north of Shiraz. Goods are imported from Europe, India, China, and other parts of the world by this route for most of the southern Persian provinces and in smaller quantities for Teheran. This is the principal mail route for India and the Far East.

Teheran to Koom, 6 stages, 196 miles.—In the early part of 1890 the Imperial Bank of Persia obtained a concession from the Persian Government to construct a cart road from Teheran to the Karoon River, which, through the intervention and at the request of Sir H. Drummond Wolff, the English minister at Teheran, had recently been thrown open to navigation. It was hoped and believed that through these concessions, giving greater facilities and expedition for transport and opening up large tracts of territory, hitherto, from the absence of road communications, practically closed to the outside world, a great impulse would be given to internal industries, and foreign merchandise would more rapidly reach its destination, be sold at lower rates, and yet give a more profitable return to the importers. It would, moreover, it was contended, enable European goods to compete more successfully with their Russian rivals, which within the last few years have deservedly risen in reputation and increased immensely in extent. The failure, however, of certain enterprises connected with Persia and the rather sudden and unexpected fall in the Imperial Bank of Persia's shares gave a shock to Persian credit in London which proved fatal to the prospects of the road.

The bank, notwithstanding these adverse circumstances, provided the money to construct the first section, from Teheran to Koom. A road 16 feet wide, macadamized where the soil was of a clayey or spongy nature, with bridges and guest houses of a more modern type, and with a supply of necessary conveniences for the accommodation of travelers, was finished by the end of 1892. A service of wheeled vehicles for the conveyance of passengers and merchandise was organized and started soon after the completion of the road. A fare of \$2.50 was charged for each seat in the coach, for the whole journey.

Koom is a holy city to which large numbers make pilgrimages to offer their devotions at the shrine of the saint. These, it might be supposed, would have taken advantage of this more rapid and comfortable method of reaching their destination, but from some cause or other, probably superstition, it did not attract sufficient numbers to pay for the daily service. Koom being but a small town, and the road forming but a short section of the Teheran-Bushire highway, the difference of two days in the arrival of goods at either end did not offer sufficient inducements to merchants to substitute the wagon for the camel. Consequently, about eight months ago, the service was given up and the horses and vehicles sold. At the present time a toll of 5 cents a head is charged on all quadrupeds that pass over the road, with the exception of large flocks of sheep and goats, on which one-half cent a head is taken. This, I believe, realizes a gross income of a little over \$100 a week. The road is in a good state of repair, and it would be of great public advantage if it could be carried through to the Karoon River.

Koom to Kashan, 3 stages, 64 miles.—This division is almost level and presents no difficulties whatever. Tobacco is grown to a large extent

in the neighborhood of Kashan, and the town itself is the center of a considerable silk and velvet weaving industry.

Kashan to Ispahan, 5 stages, 108 miles.—Part of the first and all the second stages lie across the Kohrood range and its offshoots, which at the highest point of the pass reaches an altitude of about 6,000 feet. Beyond this the road is smooth.

Ispahan to Shiraz, 12 stages, 306 miles.—This road, though rough and hilly in some places, presents no serious difficulties either for travelers or transport. Ispahan is interesting on account of its many and fine relics of its former greatness, when it was the capital of the Persian Kingdom; for its splendid old palaces, its fine bridges, extensive gardens, and rich fruits. It is also the chief manufacturing town of Persia, and produces carpets, brocades, armor, and a variety of steel and brass articles, both useful and ornamental. Some of the older specimens are of rare beauty and durability, and are much sought after by connoisseurs and antiquarians. Considerable quantities of opium, cotton, and tobacco are grown in the neighborhood of Ispahan.

Shiraz to Bushire, 10 stages, 186 miles.—For a distance of 40 miles from Shiraz the road lies through an undulating country. Then for about 80 miles it traverses a succession of mountains, intersected with valleys, some of much fertility. This is the region of the date palm, and the narcissus flourishes in its uncultivated, natural state. Some of these mountains are called kotals, which may be rendered mountain-hill, and the road is reputed to be the worst in Persia. The highest point is 7,400 feet. The transport of goods is effected by mules and donkeys, the passes being too steep and narrow for camels. Bushires is the chief Persian port of the gulf, and is the depot for the principal part of the trade of south Persia. There is a regular service of steamers once a fortnight with Bombay, and once a month or oftener directly with England.

Branch road.—Kashan to Yezd, 13 stages, 316 miles: This road is comparatively free from serious impediments, crossing no mountains of great elevation. Yezd has considerable manufacturing industries, in shawls of the cashmere pattern and texture (although of inferior quality), rugs, prints, camlets, and other stuffs. Opium and asafetida are grown in the neighborhood.

Yezd to Kerman, 10 stages, 250 miles: This road is free from any unusual obstacles. Shawls and a few other materials are manufactured at Kerman.

Kerman to Bendar Abbas, 11 stages, 360 miles: This road is mountainous, but permits of the passage of camels. Bendar Abbas, east of Bushire, is in importance the second Persian port on the Persian Gulf, and is a considerable center both for export and import trade.

TEHERAN-MESHED ROAD.

This road, which is very much used by pilgrims visiting the holy shrine at Meshed, was, until Russia subdued the Tartar tribes of cen-

tral Asia, dangerous for a considerable distance from the incursions of these freebooters. Bands of marauders used to sweep over the frontier, plunder whole caravans and villages, and carry off the people into captivity. It has, however, for some years past, been free from the terror of these barbarians.

Teheran to Shahrood, 11 stages, 68 miles.—This road is nearly level all the way, and presents no features of interest.

Teheran to Nishapoor, 10 stages, 240 miles.—This road presents the same general features as the Teheran-Shahrood road. The famous turquoise mines are about 40 miles from Nishapoor.

Nishapoor to Meshed, 3 stages, 76 miles.—This road traverses some considerable hills, but they offer no serious impediment.

Branch road.—Shahrood to Asterabad, 64 miles: This road is less difficult to traverse than the one mentioned below, and is possible for wheeled vehicles. I mention this branch because wool is sometimes sent by this route to Europe and I think even to the United States.

TEHERAN-ASTERABAD ROAD.

This, like most of the roads terminating at the Caspian, is very mountainous. The present Shah has, however, made great improvements, but not sufficient to supersede the camel or mule by wheeled conveyances. Distance about 300 miles.

COASTWISE AND RIVER ROUTES.

The Caspian Sea, which is practically a Russian lake, is, except to Russia, of very little advantage to European trade, although the conditions of transit in Russia for goods going west are much more favorable than for those coming east.

The Karoon River in the south, which forms a junction with the Tigris near the small town of Mohamerah, is the only navigable river in Persia. This river was, by the action of the Shah and his Government, thrown open to the commerce of the world about five years ago; and although the results have not realized the expectations then formed of the concession, on account of the failure to construct the projected road it has not been abandoned.

A steamer of 300 tons burden and 100 horsepower, belonging to Lynch Bros., an English firm, navigates the river from Mohamerah to Ahvaz, a distance of 110 miles. Two small steamers, one of 20 tons and the other of 30 tons, ply between Ahvaz and Shushter, a distance of 60 miles. The entire journey from Mohamerah to Shushter is accomplished in about twenty-four hours; in a little less time downstream.

Pure petroleum springs exist in the neighborhood of Shushter, but up to the present no serious attempt has been made to develop the workings. The oil collected is used for the most part in painting.

Steamers navigating the Persian Gulf, and also those on the Caspian Sea, call at all Persian ports. Coasters, as such, do not exist in either.

RAILROADS.

The only railroad in Persia is a short line, about 6 miles long, constructed tentatively between Teheran and a village called Shah-Zadeh-Abdul-Azim—the site of the ancient city of Rhey or Rhages—which contains a well-known shrine, whither great numbers of people from Teheran and the surrounding districts repair to present their offerings and devotions. This line was constructed by a Belgian company about ten years ago, but as it depends almost entirely upon the pilgrim traffic for its revenue, it has been generally worked at a loss.

SUPERVISION OF ROADWAYS.

From what has been already said about Persian roads in general, it may be readily inferred that, with two exceptions, and certain local roads, they are under no supervision or control of any government department or public or local body whatever. If a bridge is carried away or destroyed, it is repaired either by the people of the district or by the government of the province in which it is situated. In some cases, where the work is of great importance, it is done by the central government.

Tolls are collected on each animal that passes certain points of the road, averaging 5 to 10 cents per head. The fund thus provided is to pay the guards employed for the protection of the traffic.

CARAVAN TRAVEL.

It would be impossible to form even an approximate estimate of the true number of caravans that pass any given place during each day of the year. Any attempt would be the merest guess, and would prove rather misleading. The importance and value of statistics have not been realized in Persia. The most reliable statistics relative to exports and imports are those collected by European merchants and consuls, but these have to be received with many reservations.

FREIGHT RATES.

The average cost for the transport of goods is about 25 cents a ton.

This, however, is liable to be considerably modified by the local supply and demand, for even Persian camel and mule men are fully conscious of their own interests, and when there is an opportunity of getting above the ordinary rate, do not fail to take advantage of it.

The usual charge for a riding horse to accompany a caravan is about 1 cent per mile, but the direction in which the caravan is going not only makes a great difference. For instance, from Resht to Teheran the fare might be 3 cents, while from Teheran to Resht it is less than 2 cents per mile. This is accounted for by the fact that a great deal more is brought to Teheran than is sent out of it. This is the case on all the great mercantile roads.

DISTANCES.

Having already given the lengths of the different sections of the great roads, it only remains that I should give the total lengths of the roads leading out of Teheran:

To—	Miles.	To—	Miles.
Julfa, Russian frontier, via Tabrez.....	476	Bushire.....	758
Damadim, Turkish frontier, via Tabrez....	600	Bendar Abbas.....	1,048
Resht.....	216	Meshed.....	588
Khanakin, Turkish frontier, via Hamadan.....	444	Asterabad.....	206

The distances given throughout this report are those of the postal service. They are not mathematically correct, but as they are the basis for charges for the post horses they will be more useful than exact measurements.

MAIL SERVICE.

The mails leave Teheran for Europe every Monday and Thursday, and should arrive on Tuesday and Saturday; for India and the Far East they leave on Saturday, but the arrival is uncertain, generally on Thursday or Friday.

Letters reach England in a little over three weeks, and the United States in about a month, or a little more.

ILLUSTRATIONS.¹

The illustrations accompanying the report are rather of an archaeological and antiquarian character than having any direct bearing on the subject of the report. They represent, however, certain aspects of civilization which are now rapidly passing away, and to such as take an interest in these studies, they may prove of some value.

JOHN TYLER,
Vice Consul-General.

TEHRAN, June 24, 1894.

¹ Filed in the Bureau of Statistics, viz: (1) Sculpture procession, Persepolis; (2) Ruins of Persepolis; (3) Nakshi Rустeen, near Persepolis; (4) Sculpture, Persepolis; (5) Tomb of Cyrus, near Persepolis; (6) Old stone bridge near Ispahan; (7) Caravansary built by Shah Abbas; (8) Modern caravansary; (9) Posthouse and carriage; Bisitun and caravan of camels and horses; (10) Rock sculpture, Taki-Boostan, Bisitun; (12) Mountain road in the province of Mazenderan; (13) Tobacco caravan of camels; (14) Map of Persian highways.



BRITISH INDIA.

RAILWAYS.

The earliest proposals for constructing railways in India were put forward in 1843-44. At that time the palanquin and the house boat were the recognized vehicles for long journeys, both for Europeans and natives. Many reasons in support of their views were brought forward by those who foretold failure, one of the most cogent being that the mode of locomotion was opposed to the religious and social prejudices of the natives, and that they would not patronize it. It was not well accepted even by the advocates of the building of railways when built they would have to seek their dividends from the saving of freight, for they conceded that the passenger traffic would yield but small returns. It is rather curious that, in view of this really accepted condition, the receipts on Indian railways from passenger traffic in the first three years largely exceeded the receipts from goods traffic. To the present day the passenger traffic has continued to show the most extraordinary development.

In 1845 the directors sent out to India Mr. Simms, a railway engineer of experience. He, associated with two officers of the Indian engineering corps, was to suggest, after due inquiry, some scheme of moderate cost as a first experiment.

The directors of the East India Company were not averse to the construction and administration of railways in India by the agency of private companies; but, recognizing the haphazard way in which schemes had been commenced in England, they wisely determined that in India the railways at least should be constructed on certain conditions which would give the Government powers of control, and, if necessary, powers of purchase. They therefore suggested for consideration that the plans and estimates of any project and the constitution and agreement of any proposed company should be submitted for the sanction and approval of the Government, and that the books and accounts should at all times be open to inspection by officers appointed for the purpose. In this is seen the first germ of a policy of government commencement of a system of control which has since been followed and has become the distinguishing feature of the Indian railway system.

In January, 1846, Mr. Simms drew up a memorandum in which he made the following suggestions of terms which should be offered to the Government: As to the assistance to be given by the Government, he suggested that a lease should be given to a company affording it power to construct, maintain, and hold certain lines for a term of years; that the land should be given by the Government free of cost for permanent use, and no tax should be imposed on the railway as it proceeded, and that the Government should have complete control over its servants. On the

other hand, the company should make the necessary surveys and plans, and submit them for approval; should construct the line in accordance with approved specifications, and maintain all works in perfect repair until the expiration of the lease, when they should be handed over to the Government without payment. No deviation from a sanctioned plan was to be made without the further sanction of the Government, and the inspecting officer was to have power to condemn, stop, or order the reconstruction of any work. If any company failed in its engagements, the Government was to have power to take the whole property into its hands and do with it as it thought fit. Further, he proposed that on the completion of any line every working regulation, rule, or by-law, the tariff rates and fares for goods and passengers, the number of trains per diem and times of starting same, should be approved; in short, every detail was to be submitted for the acceptance of the Government, and no line was to be opened for traffic until all proposed rules had been sanctioned. Moreover, every railway was to carry mails, troops, and military stores at reduced rates. The failure to run one train a day from end to end of a line was to be held to be evidence that the railway had ceased to be used as such. All Indian railways were to be constructed on one specification, worked on one system, and supplied with stock of one uniform pattern, while every company was to keep its accounts in approved forms, and the Government to have power to call for any returns, financial or statistical, that might be thought necessary.

Many of these stipulations show wisdom and sound judgment, and most of them, with certain modifications, became the basis of the terms on which railways have since been built by companies.

The proposal to give land free of cost has been a regular and leading feature in all railway concessions to the present day. As regards the power of becoming eventually the proprietor of railways in India, the Government considered that the option of so doing should be reserved on certain conditions at the expiration of a certain period or of entering into new arrangements with the company. This also became a leading feature in all subsequent contracts. However, it was necessary to add some further attraction to induce capital to invest. This was done by the Government guaranteeing interest at a certain figure. Under this system of guaranty and control the great trunk lines have been built, all on the standard gauge of 5½ feet.

By the end of 1855 the system of railways projected was rapidly being carried out. The outbreak of the mutiny in 1857 threw everything into confusion, and the progress of railway construction was seriously impeded. One good feature of the guaranty system was, however, brought out by the troublous times of the mutiny, viz, money was always forthcoming to carry on the works. With the extraordinary demands on the financial resources of the Government made by the necessities of military operations, railway building, had the Govern-

ment been relied on to furnish the funds, would have had to stop until more propitious times.

In 1869, under Lord Lawrence, the Government inaugurated a policy which radically changed the system of railway building in India. Up to that time the construction of railways under Government control was done by private companies, under a guaranty or some equally effective assistance, and it had been held to be, if not the most economical, the only possible way of carrying out and administering these works with a due regard to the interests of all concerned. The statesmen who governed India fully recognized and were determined to avoid the dangers of placing in the hands of uncontrolled private corporations the monopoly of the common carrier's business on the highways of the country and of giving to such corporations the power of taxing the production and consumption of the country to as great an extent as they might see fit. Through this system of complete control of the public highways of the country in the hands of the Government, the companies being guaranteed a satisfactory return and prevented from grinding out more than a reasonable profit on their investment, India has escaped the evils which inevitably arise when the beneficiaries of a public monopoly spend part of the money earned by the favors of legislation in striving to procure more and more favorable legislation or to protect themselves from the efforts of the public to restrain them in their aggressions.

As the experiment had been tried for so many years of building railways by using the credit of the Government indirectly to procure the necessary funds, Lord Lawrence saw that it would be cheaper to use directly the credit of the Government to raise money, and to make use of the large number of trained engineers in Government employ in pursuing for the future the policy, as far as was consistent with actual and implied agreements with the existing companies, of the Government building railways itself. It was estimated that the revenues could bear an annual charge on account of railways, to meet charges for guaranteed loans, and loss by exchange, of £2,000,000 (\$9,733,000). An analysis of the probable future earnings of the existing lines and of new lines to be made seemed to show that the country might afford to pay £3,750,000 (\$18,249,375) yearly in the prosecution of railway building, and at the end of twenty years the yearly charge on the railways would be reduced to about £1,000,000 (\$4,866,500). In estimating the net charge for interest on new lines it was, however, assumed that the rate of interest would be 5 per cent, a figure which was largely correct and is now nearer 3½ per cent. The gross average earnings of the railways were estimated to reach £30 (\$146) per mile per year at that time 300 rupees). After twenty years, although circumstances had been altered since this estimate was made, and many thousands of miles of military and famine lines have been built which were not included in the estimate, the actual figure has, as it happens, closely approxi-

mated to this. It was, during 1891-92, 286 rupees (\$139) per mile per week.

At this period, also, the idea of a uniform gauge of 5 feet 6 inches for the whole country was abandoned, and an extensive scheme of light lines on narrow gauges, suited to the economic and financial condition of the country, was inaugurated as an adjunct to the main trunk system of broad-gauge roads. A gauge of 1 meter (3 feet 3 $\frac{3}{8}$ inches) was decided upon, and on this gauge up to date over 7,000 miles of road have been built.

This work has been done through the agency of a railway branch of the public works department of the Government, into which were drafted most of the engineers then (1870) in Government service who had had railway experience in England, added to those who were available from the staffs of the guaranteed companies and a certain number of royal engineers. The money for this system of direct construction by the State was raised in London by the secretary of state on the credit of Indian revenues.

The sums expended on railway extension between the fiscal years 1870-71 and 1891-92, the rate of interest, and the rate of sterling exchange on the rupee are given in the following tables. The figures of expenditure include construction by direct State agency and the sums spent in recent years indirectly by the State through the agency of assisted companies.

Sums expended on State railways.

Financial year.	Sterling.			Equivalent in United States money.		
	Borrowed money.	Revenue.	Total expenditures.	Borrowed money.	Revenue.	Total expenditures.
1870-71.....	£452,748	£9,569	£462,317	\$2,203,398	\$46,567	\$2,249,965
1871-72.....	650,170	4,175	654,345	3,164,252	20,318	3,184,570
1872-73.....	1,480,047	14,863	1,494,910	6,959,323	72,331	7,031,654
1873-74.....	2,424,526	39,409	2,463,935	11,798,956	191,784	11,990,740
1874-75.....	3,106,430	114,481	3,220,911	15,117,441	567,122	15,674,563
1875-76.....	3,245,401	29,680	3,275,081	15,793,743	144,438	15,938,181
1876-77.....	2,965,110	38,260	3,003,370	14,429,701	186,193	14,615,894
1877-78.....	4,158,174	50,896	4,209,070	20,235,754	247,685	20,483,439
1878-79.....	3,465,221	171,782	3,637,003	16,825,498	835,977	17,661,475
1879-80.....	2,987,383	1,786,155	4,773,538	14,538,099	8,692,323	23,230,422
1880-81.....	3,212,893	2,317,395	5,530,288	15,635,543	11,277,603	26,913,146
1881-82.....	2,213,773	1,131,470	3,345,243	10,773,326	5,508,299	16,279,625
1882-83.....	1,883,542	347,019	2,230,561	9,166,257	1,698,768	10,865,025
1883-84.....	3,382,367	470,486	3,852,853	16,460,289	2,289,620	18,749,909
1884-85.....	3,526,152	1,209,958	4,736,110	17,160,018	5,888,261	23,048,279
1885-86.....	4,712,828	1,221,055	5,933,883	22,934,977	5,942,264	28,877,241
1886-87.....	5,123,105	406,635	5,529,740	24,931,590	1,978,889	26,910,479
1887-88.....	2,251,776	80,945	2,332,721	10,969,279	393,197	11,353,197
1888-89.....	1,178,111	23,308	1,201,419	5,733,277	113,458	5,846,735
1889-90.....	2,794,458	19,734	2,814,192	13,599,618	96,036	13,695,654
1890-91.....	2,881,783	54,512	2,936,295	14,024,196	265,283	14,289,479
1891-92.....	2,770,336	648,028	3,418,364	12,481,840	3,153,628	16,635,468

Average rate of interest for loans and value of rupee, 1870 to 1892.

Financial year.	Average rate of interest for loans.	Value of rupee.		Financial year.	Average rate of interest for loans.	Value of rupee.	
		In sterling exchange.	In United States money.			In sterling exchange.	In United States money.
	<i>Per cent.</i>	<i>s. d.</i>	<i>Cents.</i>		<i>Per cent.</i>	<i>s. d.</i>	<i>Cents.</i>
1870-71.....	3.98	1 10½	44.7	1881-82.....	3.58	1 7½	39.2
1871-72.....	3.93	1 10½	44.6	1882-83.....	3.97	1 7½	38.9
1872-73.....	3.93	1 10½	44.8	1883-84.....	3.97	1 7½	38.9
1873-74.....	3.90	1 10½	44.4	1884-85.....	3.20	1 7½	39.1
1874-75.....	3.94	1 10½	44.2	1885-86.....	3.52	1 6½	36.7
1875-76.....	3.99	1 9½	43.3	1886-87.....	3.46	1 5½	35
1876-77.....	3.92	1 8½	41.1	1887-88.....	3.46	1 5	34
1877-78.....	3.94	1 8½	41.2	1888-89.....	3.12	1 4½	32.1
1878-79.....	3.96	1 7½	39	1889-90.....	2.98	1 4½	32.3
1879-80.....	4	1 8	40.4	1890-91.....	3.02	1 6	36.3
1880-81.....	3.58	1 8	40.4	1891-92.....	3.18	1 4½	32

The terrible famines which devastated parts of India during the years between 1874 and 1879 showed that it was necessary to provide some means of quickly and economically moving food products from the districts where the harvests had been abundant to those where they had failed. From this arose, in 1880, the projection of large and important schemes of famine-protection railways. It was found that on account of the expense of the Afghan war and other causes it would probably involve the Government of India seriously if it undertook to furnish the money to carry out this plan. Therefore a reversion in part had to be made to the early system of assisted private companies; so that another era of company lines side by side with State lines was thus commenced under the viceroyalty of Lord Ripon. It was found most profitable to let companies build the lines and work them on a lease, the lines to be considered State property, the Government guaranteeing 4 per cent interest and allowing the company to retain one-fourth of the net profits above that amount, should there be any, the other three-fourths to go to the Government.

Various changes were also found to be advisable in the management of the lines already built. The Government took control of certain lines which had been worked by the companies which had built them, while, on the other hand, it leased to certain companies lines which had been built and managed by the State.

The year 1879 saw the institution of the provident fund for servants employed on State railways, all employees being obliged to subscribe to it and voluntary subscriptions to a certain amount being allowed besides. Government gave depositors the same rate of interest as was allowed to depositors in State savings banks. As an inducement to employees to take an interest in the economical administration of the lines they are engaged on, they received an annual bonus from net profits. This fund enabled the Government before long to abolish the system of pensions for railway employees.

Until the outbreak of the Afghan war in 1878 no comprehensive views had been held in regard to, nor any programme laid down for,

railway construction for purely or mainly military objects. The value of railway communication during this campaign was vividly illustrated in the case of a railway which had been rapidly pushed across the desert to the mouth of the Bolan Pass, where one train in a day of sixteen hours was found to do work which it would have required 2,500 camels to do in a fortnight. The fall in the value of silver has, however, materially interfered with the carrying out of plans laid down, while the serious financial condition in which the Government finds itself, resulting therefrom, has rendered practically impossible the carrying out of any forward policy on a considerable scale in the immediate future.

In regard to the construction of Indian railway lines, it may be said that from the beginning they have been thoroughly and solidly built. The "pioneer" American system is impossible in India. The climate generally, the intensity of the seasons, the profusion of vegetable and insect life, and the general want of suitable timber forbid, both on the score of first and ultimate cost, the rapid and temporary construction which in the Western States is equally possible and economical.

During the viceroyalty of Lord Mayo an impression became prevalent that if the American system could be adopted matters would get on faster and the money go farther. The Government engaged an able and experienced American engineer in order to ascertain what amount of foundation there was for this view. After remaining two or three years in the country this gentleman (Mr. Miller) gave it as his opinion that the conditions of railway construction in India differed entirely from those in the United States, and that practically he had nothing to object to as regards Indian methods or designs, which, in fact, he readily adopted in the works he carried out in India.

STANDARD DIMENSIONS.

The following are the standard dimensions to be observed on railways in India. The maximum, minimum, and fixed dimensions given in this schedule may not be infringed under any circumstances. Where it is proposed to execute any work or to procure any railway material which will infringe these dimensions, the sanction of the Government of India is to be obtained before such work is commenced or order given.

I.—STANDARD GAUGE (5 FEET 6 INCHES).

SINGLE LINE.

Minimum width of formation :

In embankment	feet..	20
In cutting (excluding side drains).....	do..	18

DOUBLE LINE.

Minimum width of formation :

In embankment	feet..	34
In cutting (excluding side drains).....	do..	32
Standard distance, center to center, of tracks (out of stations)	do..	14

Maximum angle of curvature:

In ordinary country (radius, 1,910 feet).....	degrees..	3
In difficult country (radius, 955 feet).....	do...	6

The angle of curvature is taken as the angle at the center subtended by an arc of 100 feet in length; thus, the radius for a 1° curve is 5,729.578 feet.

Minimum width of ballast at rail level.....	feet..	11
Minimum depth of ballast below sleepers.....	inches..	8

Minimum dimensions for timber cross sleepers:

Length.....	feet..	9½
Breadth.....	inches..	9
Depth.....	do...	5
Minimum area in cross sections.....	square inches..	50
Minimum number of cross sleepers per mile.....		1,760

On bridges where the cross sleepers rest directly on longitudinal girders the sleepers are to be spaced not more than 2 feet 6 inches from center to center, and are to be not less than 6 inches deep, exclusive of any notching which may be required.

Clearances:

Maximum clearance of guard rail for points and crossings.....	inches..	1½
Minimum clearance of guard rail for points and crossings.....	do...	1¼
Minimum clearance of guard rail for curves and level crossings.....	do...	2
Minimum depth of space for wheel flange from rail.....	do...	1½

LOCOMOTIVE ENGINES.

The maximum moving dimensions laid down for carriages and wagons apply also to locomotive engines.

Weight on a pair of wheels:

Maximum under any circumstances.....	tons..	15
Maximum per foot of diameter.....	do...	3.75

Weight per foot run of wheel base:

Maximum for either engine or tender separately in the case of tender engines.....	tons..	3
Maximum for tank engines.....	do...	4

Weight per foot run over buffers:

Maximum for engine and tender together in the case of tender engines. do...	1.625
Maximum for tank engines..... do...	1.875

Maximum gross weight:

Maximum for tender and engine together in the case of tender engines. do...	86
Maximum for tank engines..... do...	60

The weights given are the maximum permissible under any circumstances with engine in working order and full load of fuel and water. In optional cases, engines of weights in excess of the specification given may be used under the special sanction of the Government. Such special sanction must be obtained before the engines are ordered, and the application for sanction must be accompanied by a diagram of the proposed engine, giving full particulars, and by a certificate by the Government engineer that the bridges on the section over which the engines are to be led to work are of sufficient strength.

CARRIAGES AND WAGONS.

Clearance width:

Rail level to a height of 4 feet 4 inches above rail level.....	feet..	10
Clearance height of 4 feet 4 inches above rail level to a height of 11 feet 6 inches above rail level.....	feet..	10½

Clearances to be taken with vehicle unloaded.

Maximum height from rail level:	
For unloaded vehicle at center.....	feet.. 13½
For unloaded vehicle at sides.....	do... 11½
Loading gauge for goods:	
Maximum width.....	do... 10, 7/8
Maximum height from rail level at center.....	do... 13, 1/2
Maximum height from rail level at sides.....	do... 11, 1/7
Maximum gross weight:	
On any pair of wheels.....	tons.. 12
Per foot run over buffers.....	do... 1.2
The weights given are the maximum permissible under any circumstances, with the vehicle fully loaded. The weight on a pair of wheels includes the weight of the wheels, axles, axle boxes, and springs.	
Wheel base:	
Maximum rigid wheel base for passenger vehicles.....	feet.. 16
Maximum wheel base for goods vehicles.....	do... 12
Wheels and axles:	
Standard wheel gauge, or distance apart for all wheel flanges.....	do... 5, 7/8
Standard diameter on the tread for new wheels.....	do... 3, 7/8
Maximum projection for flange of worn tire below rail level.....	inches.. 1½
Maximum thickness on tread for tires for passenger stock when worn, inches.....	1½
Minimum thickness on tread for tires for goods stock when worn... inch..	1

II.—METER GAUGE (3 FEET 3½ INCHES).

Any infringement of meter-gauge dimensions must be sanctioned by Government as heretofore stated in the case of standard-gauge railways.

SINGLE LINE.

Minimum width of formation:	
In embankment.....	feet.. 16
In cutting (excluding side drains).....	do... 14

DOUBLE LINE.

Minimum width of formation:	
In embankment.....	do... 28
In cutting (excluding side drains).....	do... 26
Standard distance, center to center, of tracks out of stations.....	do... 12
Maximum angle of curvature:	
In ordinary country (radius, 1,146 feet).....	degrees.. 5
In difficult country (radius, 573 feet).....	do... 10

The angle of curvature is taken as the angle at the center subtended by an arc of 100 feet in length.

Ballasts:

Minimum width at rail level.....	feet.. 7½
Minimum depth below sleepers.....	inches.. 6
Minimum dimensions for timber cross sleepers:	
Length.....	feet.. 6
Breadth.....	inches.. 7
Depth.....	do... 4½
Minimum area in cross section.....	square inches.. 36
Minimum number of cross sleepers per mile.....	1, 936

On bridges where the cross sleepers rest directly on longitudinal girders the sleepers are to be spaced not more than 1 foot 6 inches apart, center to center, and are to be not less than 5 inches depth, exclusive of any notching.

Rails:

Maximum clearance of guard rail for points and crossings.....inches..	1½
Minimum clearance of guard rail for points and crossings.....do...	1½
Minimum clearance of guard rail for curves and level crossings.....do...	2
The maximum clearance for curves and level crossings will vary according to the radius of the curve.	
Minimum depth of space for wheel flange from rail level.....inches..	1½

LOCOMOTIVE ENGINES.

Maximum moving dimensions:

The maximum moving dimensions laid down for carriages and wagons apply also to locomotive engines.

Weight on a pair of wheels:

Maximum under any circumstances..... tons..	8
Maximum per foot of diameter.....do...	2.67

Weight per foot run of wheel base:

Maximum for either engine or tender separately in case of tender engines, tons	2
Maximum for tank engines..... tons..	2.67
Weight per foot run over buffers:	
Maximum for engine and tender together in case of tender engines..do...	1.125
Maximum for tank engines.....do...	1.333

Maximum gross weight:

Maximum for engine and tender together in the case of tender engines..do...	46
Maximum for tank engines.....do...	32

The weights given above are the maximum permissible under any circumstances, with engines in working order and full load of fuel and water.

CARRIAGES AND WAGONS.

Clearance from rail level:

From rail level to a height of 2 feet 9 inches above rail level.....feet..	8½
From a height of 2 feet 9 inches above rail level to a height of 10 feet above rail level	8½

These heights are to be taken with the vehicle unloaded and buffer centers at maximum height of 1 foot 11 inches from rail level.

Clearance height from rail level:

unloaded vehicle at center.....feet..	11
unloaded vehicle at sides.....do...	10

Clearance gauge for goods:

Minimum width.....do...	8½
Minimum height from rail level at center.....do...	11¼
Minimum height from rail level at sides.....do...	10¼

Maximum gross weight:

Weight on any pair of wheels..... tons..	6
Weight not run over buffers.....do...	.8

The weights given above are the maximum permissible under any circumstances, with vehicle fully loaded. The weight on a pair of wheels includes the weight of the wheels, axles, axle boxes, and springs.

Clearance:

Minimum rigid wheel base for passenger vehicles.....feet..	12
Minimum rigid wheel base for goods vehicles.....do...	10

Clearance floors:

Minimum height above rail level for floor of any vehicle, unloaded (with 4-inch wheels).....feet..	3
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Height for floors—Continued.

Minimum height above rail level for floor of passenger vehicle, fully loaded (with 2-foot wheels).....feet..	2½
Minimum height above rail level for floor of goods vehicle, fully loaded (with 2-foot wheels).....feet..	2½
Wheels and axles:	
Standard wheel gauge, or distance apart, for all wheel flanges.....do...	3. 056
Standard diameter on the tread for new wheels.....do...	2½
Maximum projection for flange of worn tire below rail level.....inches..	1½
Minimum thickness on tread for tires for passenger stock when worn..do...	1
Minimum thickness on tread for tires for goods stock when worn....do...	½

The State lines on the standard gauge were laid at first with 60-pound rails, which increased to 70 pounds, and will shortly be 85 pounds, to the yard, as the standard, with 100-pound rails for heavy inclines on which engines of exceptional character are required. In every case the lines have been unusually well ballasted, an essential condition in a country where the heavy rainfall is confined to four or five months in the year, and where timber would be otherwise exposed to rapid destruction by white ants. Special care has been taken in the design and execution of masonry.

The lines are worked on the "line-clear" system. The station master at A can not start a train to B until the station master at the latter has replied in the affirmative to a telegram asking if the line is clear. On receipt of this message the fact is written on a form and handed to the driver of the train to be dispatched. European or Eurasian (half-breed) drivers are generally employed, but on freight and mixed trains natives—mostly Mussulmans and Parsees—are now largely employed in this capacity. They are found to be perfectly competent, within a certain range, and while steady and sober to a far greater degree than the European or Eurasian, their pay need not be more than half of what is necessary for the European. Their weakness lies in an insufficient knowledge of English, and especially in want of "head" and judgment in positions of difficulty.

An important feature in the administration of Indian railways was established shortly after the appointment of a director-general in the first of a series of conferences of railway officials delegated from both State and guaranteed railways. It was desirable that methods which had been adopted on State lines should be discussed and reviewed before a tribunal of experts, and, above all, that, as far as possible, an approach to uniformity of system in all essential points should be aimed at on all railways. The first meeting was held in 1880 and was eminently successful. A code of general rules was agreed to for the working of all lines, agreements were come to as to the interchange of rolling stock, etc., proposals were discussed for the adoption of uniform classification of goods, and rules were agreed to for the preparation of half-yearly statistics. This latter point has been a salient and unique feature in Indian railways, and their value has been amply recognized both by the railway officials and the general public.

In 1889, the Government clearly recognized the necessity of taking steps toward assimilating the practice of the different railways in the construction of their rolling stock. Arrangements were made for the annual assembly of a committee of locomotive and carriage superintendents at which representatives would be found from all the principal lines, including those of the State. The functions of this committee, which was to meet at some large railway center (varying each year), were defined as follows, viz:

That it should deal with all matters relating to the mechanical improvement of locomotive and carriage stock, and the design, construction, running, and repair of the same; to determine what standards should be adopted, to arrange for such experiments as may appear desirable; to publish papers of professional interest and generally; to consider and report upon all technical, administrative, or financial questions connected with rolling stock, workshops, station machinery, etc., which may be proposed by the members themselves or by the Government of India.

The decisions of the committee are determined by the votes of the members, the voting power of each being regulated by the number of miles in his charge. It is, however, understood that all the decisions of the committee are subject to the approval of the agents, boards of directors, or other authorities for individual railroads, and of the Government of India in all cases. The expenditure in connection with the meetings, cost of models, etc., is met by contributions from each line represented, in proportion to its mean open mileage for the year. The results of the meetings of this committee have been most useful in inducing the general acceptance of uniform patterns for rolling stock, etc.

GENERAL STATISTICS.

Length of lines.—The total length of railway open on the 31st of March, 1894, was as follows:

Lines.	Standard gauge.	Meter gauge.	Special gauge.	Total.
	Miles.	Miles.	Miles.	Miles.
State lines worked by companies.....	3,422½	5,152½	.....	8,605½
State lines worked by the State.....	3,876½	1,294½	28	5,199½
Lines worked by guaranteed companies.....	2,586½	.....	.....	2,586½
Assisted companies.....	183	168½	51	402½
Lines owned by native states and worked by companies.....	402½	188½	71½	662½
Lines owned by native states and worked by State railway agency.....	124	½	22½	146½
Lines owned and worked by native states.....	.....	744	94	838
Foreign lines (French and Portuguese).....	.....	58½	.....	58½
Total	10,506½	7,637	267	18,500

Expenditure.—The total expenditure on Indian railways up to December 31, 1893, including lines under construction and survey, amounted to 2,491,296,103¹ rupees (\$1,212,386,248).

The gross earnings on all railways per mean mile worked per week were 254.38 rupees (\$123.79) in 1892-93, as against 252.71 rupees (\$123.37) in 1891-92.

The net earnings derived on open lines from all railways in 1892-93 gave a return per annum on total capital outlay of 5.46 per cent.

The number and value of locomotives owned by the various lines of India are as follows: Standard gauge, 2,616 locomotives, valued at 61,790,404 rupees (\$30,070,300); meter gauge, 1,294 locomotives, valued at 24,560,577 rupees (\$11,951,305). The total value of the rolling stock of the Indian railways is 30,061,545 rupees (\$14,629,451).

Government fixes a maximum and minimum rate for freight, within which limits the roads are allowed to charge according to their discretion. From this, however, are excepted freight rates on food, grains, and coal; on these the Government reserves the right to fix freight charges.

Goods shipped by freight on Indian railways are divided into five classes. The following table shows the rate charged for each class per ton per mile, and also the fare for the first and fourth classes of passengers per mile on the principal railways:

¹ In the table showing the annual expenditures on Indian railways, the consul-general converted Indian currency into pounds sterling, estimating the rupee at 48.66½ cents, or ten to the pound. The Bureau of Statistics in converting the rupee has adhered to this valuation, the period of expenditures covering the twenty-three years ending December 31, 1893, although, on account of the recent depreciation in the price of silver, the rupee was valued by the United States Treasury Department on January 1, 1895, at only 21.6 cents.

Passenger fares and freight rates per ton per mile on Indian roads.

Railway.	Passenger fare per mile.		Goods rates per ton per mile.						
	First class.	Fourth class.	Special class.		First class.	Second class.	Third class.	Fourth class.	Fifth class.
			Food grains.	Coal.					
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
East Indian	13. 68	1. 90	2. 47 to 6. 89	2. 07 to 3. 40	6. 89	10. 34	3. 79	17. 24	20. 69
Bengal-Nagpur	13. 68	1. 52	2. 30 to 3. 80	2. 07 to 6. 89						6. 89	10. 34	13. 79	17. 24	20. 69
Indian Midland	9. 12	2. 03 to 2. 28	2. 07	2. 07	6. 89	10. 34	13. 79	17. 24	20. 69
Northwestern	9. 12		1. 52 to 1. 90	2. 59 to 5. 17						2. 07 to 6. 89	6. 89	10. 34	13. 79	17. 24	20. 69
Oudh and Rohilkhund	9. 12	3. 04	1. 90 to 2. 28	3. 45 to 6. 89	6. 89	10. 34	13. 79	17. 24	20. 69
Great Indian Peninsula	9. 12	1. 90	2. 58 to 6. 13	3. 43 to 3. 92						6. 89	10. 34	15. 32	19. 15 to 21. 45	26. 05 to 30. 65
Madras	9. 12	1. 14 to 1. 90	3. 06 to 6. 54	2. 30 to 8. 26	6. 89	10. 34	13. 79	18. 39	27. 58
Bengal and Northwestern	13. 68		1. 52 to 5. 17	4. 13 to 3. 49						8. 26 to 6. 89	6. 89	10. 34	13. 79	17. 24	20. 69
Rajputana-Malwa	11. 40	1. 52 to 1. 71	2. 07 to 7. 14	2. 07 to 4. 13	7. 14	10. 34	14. 49	18. 19	20. 69
Southern Mahratta	9. 12		1. 52 to 1. 90	2. 28 to 4. 62						3. 45 to 6. 89	6. 89	10. 34	13. 79	17. 24	20. 69
South Indian	9. 12	1. 52	6. 37 to 3. 06	6. 47 to 7. 03	6. 89	10. 34	13. 79	17. 24	20. 69
Turmah	11. 40	2. 28	3. 06 to 4. 13	7. 03 to 7. 03						7. 03	10. 34	13. 79	17. 24	20. 82

To give the entire classification of goods would swell this report unduly. The following articles are given, with the number of the class to which they belong: Raw cotton, pressed, 2; raw cotton, loose, 4; vellac, 2; timber, 2; iron castings, 2; brass castings, 3; kutch, 1; l cake, 1; cheese, 3; chemicals, 2; hemp, flax, jute, etc., 1; copper, 2; ordage, 2; dyewoods, 2; imported flour, 2; glass in panes, 3; goat and sheep skins, 1; gutta percha, 3; hardware, 3; human ashes, 5; idols, hides, 1; indigo, 3; kerosene oil, 2; piece goods, 2; tea, 2.

The total expenditure on State railway stores contracted for in England through the agency of the Indian office during the calendar year 93 was as follows:

Account of expenditure	Sterling.	Equivalent in United States money.
Bridge work	£109, 906	\$534, 858
Engineers' plant	34, 172	166, 298
Workshop machinery	6, 142	29, 890
Permanent way	324, 336	1, 578, 381
Locomotive and rolling stock	185, 093	900, 756
Construction materials and fencing	26, 199	127, 497
Tools and stores	91, 371	444, 657
Total	777, 219	3, 782, 336

Stores purchased in Calcutta and Bombay amounted to 265,234 rupees¹ (\$129,076).

The East Indian Railway.—This is a State line worked by a company. It has 1,818 miles of track, standard gauge, 475 miles being double track. It extends from Calcutta to Kalka, touching Allahabad, Cawnpore, and Delhi. At Assensol it connects with the Bengal-Nagpur road; at Jubbulpore, with the Great Indian Peninsula. The trains have vacuum brakes and are lighted with gas.

The Bengal-Nagpur Railway.—This is a State line worked by a company; system works 860 miles of road. It extends from Assensol, on the East Indian road, to Nagpur, on the Great Indian Peninsula, with a branch from Bilaspur to Katui. It is a single-track road, standard gauge.

The Indian Midland Railway.—This is a State line worked by a company; has 680 miles of road, single track, standard gauge. The center of this system is Jhausi. From here it sends out branches to Agra, where it joins the East Indian and the Rajputana-Malwa systems; to Cawnpore, where it touches the East Indian again; to Manickpur, where it connects with the East Indian, and to Itarsi, where it connects with the Great Indian Peninsula.

The Northwestern Railway.—This is a State line worked by the State; it comprises 2,450 miles. It is standard gauge and has 41 miles of double track. It extends from Kurrachee to Quetta, Peshawur, Lahore, and Delhi. It has a branch to Jammu, in Kashmir. At Ferozepore, it connects with the Rewaree-Ferozepore road; at Umballa, with the East Indian, and at Sharanpore with the Oudh and Rohilkhund road.

The Oudh and Rohilkhund road.—This is a State line worked by the State. It is standard gauge, single track, 702 miles in length. It extends from Sharanpore to Benares, on the East Indian road.

The Great Indian Peninsula Railway.—This line is worked by a guaranteed company; the system runs over 1,490 miles, of which 461 miles are double track. It is standard gauge. Bombay is the center of the system. It has a branch running northeast which connects with the East Indian at Jubbulpore. To the south it extends to Raichur, where it connects with the Madras Railway. A branch connects with the Bengal-Nagpur at Nagpur. At Poona and at Hotgi it connects with the Southern Mahratta; at Wadi it connects with the Nizanis Railway.

The Madras Railway.—This line is worked by a guaranteed company; it is standard gauge. It runs over 839 miles, of which 42 miles are double track. It runs from Madras, on the East Coast, across the Peninsula to Calicut, on the West Coast. It has a branch north to Raichur, where it connects with the Great Indian Peninsula.

¹The rupee is supposed to be equivalent to 2 shillings, or one-tenth of a pound sterling. Rx is 10 rupees, or, conventionally, a pound sterling. The pice is the one hundred and ninety-second part of a rupee.

The Bengal and Northwestern Railway.—This is a State line worked by a company. It is a meter-gauge road (39.37 inches). The system comprises 756 miles, single track. It runs from Semaria Ghat to Narainganj, with branches to Khunwa and Bettiah. It connects with the East Indian Railway and the Eastern Bengal Railway.

The Rajputana-Malwa Railway.—This is a meter-gauge line. It is a State line worked by a company. The system has 1,674 miles, single track. It extends from Ahmedabad to Agra, where it connects with the East Indian. A branch taps the Great Indian Peninsula road at Khandwa.

The Southern Mahratta Railway.—This is a meter-gauge State line worked by a company. It has 1,512 miles, single track. It extends from Poona, on the Great Indian Peninsula road, near Bombay, to the Portuguese territory of Goa; thence to Bezwada, near the East Coast, crossing the Madras Railway at Guntakal.

The South Indian Railway.—This is a meter-gauge State line worked by a company. It has 1,050 miles single track. It runs from Tuticorin, in the extreme south of India, to Madras and to Neltore, on the Gulf of Bengal, and to Dharnavarani, where it connects with the Southern Mahratta.

The Burmah State Railway.—This is a State line, meter gauge, worked by the State. It has 725 miles of road, of which 9 miles are double track. It runs from Rangoon to Wintho, passing by Mandalay. There is a branch to Prome. The other Indian lines are short.

INDIAN RAILWAYS ACT.

Inspectors.—There are certain provisions in the Indian railways act (which applies to all railways in India or Burmah) which may be of interest. The act provides that the governor-general in council may appoint persons to be inspectors of railways. Each inspector, in order to perform his duties, shall have the following powers: (1) To enter upon and inspect any railway or any rolling stock used thereon; (2) by an order, in writing, under his hand, addressed to the railway administration, to require the attendance before him of any railway servant, and to require answers or returns to such inquiries as he thinks fit to make from such railway servant or from the railway administration; (3) to require the production of any book or document belonging to or in the possession or control of any railway administration (except communication between a railway company and its legal advisers) which it appears to him to be necessary to inspect.

The duties of the inspectors are to see that the line, rolling stock, buildings, etc., are in conformity to the law as provided.

For the purpose of supervising and regulating traffic, the governor-general in council shall, as occasion may require, appoint a commission consisting of a judge of the high court and two lay commissioners, one of them at least being of experience in railway business. In hearing

any case referred to them the commissioners shall have all the powers which may be exercised in the hearing of an original civil suit by the high court, and the final order in the case shall be by way of injunction and not otherwise.

An appeal shall not lie from any order of the commissioners upon any question of fact on which two of the commissioners are agreed. Subject to this provision, an appeal shall lie to the high court. The appeal must be presented within six months. Notwithstanding the appeal, the order of the commissioners shall continue in force until it is reversed or varied by order of the high court. When it has been proven that an order of the court has not been obeyed, the court may order the party so disobeying to pay a sum not exceeding 10 rupees (\$4.866) for every day during which the injunction is disobeyed. An order of the commissioners shall be final except in certain cases provided for in the act. As a matter of practice, a necessity for the appointment of the members of this commission has not yet arisen, the powers of the director-general of railways, the other provisions of the act, and the annual conferences of railway men having sufficed to settle all disputes which have arisen so far.

Traffic facilities.—Every railway administration shall, according to its powers, afford all reasonable facilities for the receiving, forwarding, and delivery of traffic upon and from the several railways belonging to or worked by it, and for the return of rolling stock. A railway administration shall not make or give any undue or unreasonable preference or advantage to or in favor of any particular person or railway administration or any particular description of traffic in any respect whatsoever, or subject any particular person or railway administration or any particular description of traffic to any undue or unreasonable prejudice or disadvantage in any respect whatsoever. A railway administration working railways which form part of a continuous line of railway communication, or having its terminus or station within 1 mile of the terminus or station of another railway, shall afford all due and reasonable facilities for the receiving and forwarding by one of such railways of all the traffic arriving by the other at such terminus or station without unreasonable delay and without any such preference, or advantage, or prejudice, or disadvantage as aforesaid, and so that no obstruction may be offered to the public using such railways as a continuous line of communication, and so that all reasonable accommodation may, by means of such railways, be at all times afforded to the public in that behalf. The act goes on to prescribe that due notice shall be given by the railway administration requiring the traffic to be forwarded, and to provide for the apportionment between the railways of the total of freight paid.

Whenever it is shown that a railway charges one trader or class of traders, or the traders in any local area, lower rates for the same or similar freight, or lower rates for the same or similar services, than it

charges to other classes of traders, or to the traders in another local area, the burden of proving that such lower charge does not amount to an undue preference shall lie on the railway. A railway may charge reasonable terminals; in case of dispute the commissioners are to decide what are reasonable terminals. In deciding the question or dispute the commissioners shall have regard only to the expenditure reasonably necessary to provide the accommodation in respect of which the terminals are charged, irrespective of the outlay which may have been actually incurred by the railway in providing that accommodation.

At every station at which a railway company quotes a rate to any other station for the carriage of traffic, other than passengers' baggage, the railway servant appointed by the company to quote the rate shall, at the request of any person, show to him at all reasonable hours, and without payment of any fee, the rate books or other documents in which the rate is authorized by the company or companies concerned. Where any charge is made by and paid to a railway company in respect of the carriage of goods over its railway, the company shall, on application of the person by whom or on whose account the charge has been paid, render to the applicant an account showing how much of the charge comes under each of the following heads, namely: The carriage of the goods on the railway, terminals, demurrage and collection, unloading, and other expenses, but without particularizing the several items of which the charge under each head consists. Every railway company shall, in forms to be prescribed by the Government, publish half yearly, or at such intervals as the Government may prescribe, such returns of its capital and revenue transactions and of its profits as the Government may require, and shall forward a copy of such returns to the Government as it may direct.

The railway administration is allowed to charge a greater sum for a longer haul over the same line, though, under certain circumstances, an equal sum may be charged for a shorter and for a longer haul. The advisability of such extra rate per mile having been shown to the satisfaction of the director-general of railways.

Such cases rarely arise. When they do, the matter is at once taken up by the Government and settled in the best interests of the public.

GOVERNMENT OWNERSHIP.

It is but a few years before all the railways will be in the hands of the Government, according to the provisions of their charters.

Decisions to the ownership of railways by the Government, as in India, seem to be the very deliberate speed at which the rate has increased, the slowness of the service, and a more expensive management of work which naturally attends the action of Government officials and which is quite noticeable when compared with the energy of private corporation officials, driven by competition and the clamor of shareholders for more and larger dividends. On the other hand,

there are many recommendations in favor of the system and very great benefits apparent in it. First and foremost, railways are not built unless they are needed and the tributary country can support them without suffering. No parallel lines are built or commenced for stock-jobbing purposes.

Stock is not watered to rob the public by concealing the amount of interest earned on capital invested, and bonds are not issued to destroy the capital of stockholders. The capital stock can only be increased or bonds placed on the road to make improvements which the Government officials have decided to be necessary. The proceeds of the bonds or other indebtedness are accounted for and the transaction is published in the report of the director-general, where it is open and available to the general public. The railways are looked upon as public works, built for the public benefit by the aid of the powers of the Government. They are intended to be so used, and any increase of revenue arising from increased traffic or greater economy in working inures to the benefit of the public in the reduction of rates, in an increase of mileage, or in an improved service. A reasonable interest on their investment is held to be a just compensation for the shareholders, who are absolutely prevented from increasing their profits by fictitiously increasing their capital interest by watering the stock or by making themselves gifts of bonds for which no money has been paid. This result is obtained, first, by the very high standard which characterizes the official conduct of the civil-service officials who govern India, and, in the second place, by the enforced publicity which attends every act of the railway officials, through the very full and frequent reports of all their transactions which they have to furnish, and which are published by the Government, after having been put in such plain and practical shape that a person with the least amount of technical knowledge can understand them.

ACKNOWLEDGMENTS.

I take great pleasure in acknowledging my indebtedness for information to the able annual report of Lieut. Col. W. S. S. Bisset, C. I. E., R. E., and to the very interesting volume of Horace Bell, esq., M. Inst. C. E., consulting engineer for State railways, entitled "Railway Policy in India."

OCEAN STEAMSHIP LINES.

Calcutta has connections in all directions by steamship lines. The principal companies are the Peninsular and Oriental Steam Navigation Company, the Anchor Line, the Compagnie des Messageries Maritimes, the Indo-China and Aparcar lines, the British India Steam Navigation, the Clan Line, etc.

Peninsular and Oriental Line.—This line has fortnightly sailings from Calcutta to London, via Colombo, Aden, Port Said, Marseilles, and Plymouth. At Colombo connection is made with their ships for China

and the East generally. First-class fare to London, 750 rupees (\$365).¹ The ships are about 4,000 tons.

Clan Line.—This line runs a fortnightly service between Calcutta and London, via Madras, Colombo, Suez, and Malta. Ships about 4,000 tons burden. First-class fare to London, 600 rupees (\$292).

Messageries Maritimes.—A ship of this line is run once a month between Calcutta and Colombo. At the latter port connection is made with the ships of the main line between Marseilles and China. First-class fare to Marseilles, 700 rupees (\$341).

Anchor Line.—This line has a fortnightly service between Calcutta, London, and Glasgow, and connects at Glasgow with ships of its own flag for New York. When trade justifies it, a ship is frequently sent out to some port in the United States. The ships run from 3,000 to 9,000 tons. First-class fare to London, 600 rupees (\$292).

Asiatic Steam Navigation Company.—This company runs a weekly line to Burmah, a fortnightly line to coast ports and Bombay, and has a regular mail service to the Andaman Islands, calling at Madras and Rangoon, every six weeks. First-class fare to Rangoon, 75 rupees (\$350); via Andamans, 104 rupees (\$48.66).

British India Steam Navigation Company.—This company sends a ship every two weeks to Madras, Colombo, Aden, Suez, Naples, Plymouth, London; to Australian ports every six weeks; to Mauritius, with a shipment to Natal and Cape colonies, every four weeks. First-class fare to London, 625 rupees (\$304); to Melbourne and Sydney, 400 rupees (\$195).

Line of steamers.—Regular fortnightly service, Calcutta to London, via Colombo, Perim, Port Said, Suez, and Malta. Only first-class passengers carried. Fare, 600 rupees (\$292).

China and Apar lines.—Calcutta to Hongkong, sailing every fortnight. First-class fare, 250 rupees (\$122).

It is again called to the fact that rupees are converted into dollars at the rate of 365 cents per rupee, as was done by the consul-general in the first part of the year, while the United States Treasury Department valued the rupee on 1895, at 21.6 cents.

Freights, of course, vary with supply and demand; at present they are to different points as follows:

Class of goods.	Unit.	To London.		To Liverpool.	
		Via Canal.	Via Cape.	Via Canal.	Via Cape.
Sugar	20 hundredweight	\$3.04	Nominal..	\$4.27	Nominal
Saltpeter	do	3.04	do	4.27	Do.
Wheat	do	3.65	do	4.27	Do.
Rice	do	3.65	do	4.27	Do.
Linseed	do	4.25	do	4.86	Do.
Rape seed	do	5.47	do	Nominal..	Do.
Poppy and teel seeds	do	6.08	do	do	Do.
Cutch in boxes	do	7.30	do	do	Do.
Jute	5 barrels of 52 cubic feet.	5.47	do	5.47	Do.
Tobacco	do	5.47	do	Nominal..	Do.
Cotton	50 cubic feet	5.47	do	6.08	Do.
Safflower	5 barrels of 50 cubic feet.	.....	.....	6.08	Do.
Hides	14 hundredweight	12.16	\$7.30	6.08	Do.
Tea	50 cubic feet	9.13	Nominal..	6.08	Do.
Shellac and lac dye	do	7.30	do	6.08	Do.
Indigo	do	18.25	do	6.08	Do.
Silk	10 hundredweight	9.73	do	6.08	Do.
Castor oil	20 hundredweight	7.30	do	7.90	Do.
Turmeric	16 hundredweight	6.68	do	Nominal..	Do.
Gunnies	do	6.68	do	7.30	Do.

To Boston.—Saltpeter, nominal; seeds and indigo, \$6 per ton.

To Australia.—Gunnies, \$6.08 per ton.

To Bombay.—Dead weight, \$4.38 per ton; measurement goods, \$9.73 per ton.

To Colombo and Galle.—Rice and grain, \$2.43 per bag; measurement goods, \$7.30 per ton.

To Mauritius.—Rice, grain, etc., \$2.43 per bag.

To Port Natal.—Rice and grain, \$11.15 per ton.

To the Clyde.—Jute, \$6.52 per ton.

To Hamburg.—Dead weight, \$6.52 per ton; linseed and measurement, \$7 per ton.

Marseilles and Genoa.—Measurement and seed, dead weight, \$6.52 per ton; light freight, \$10.33 to \$12.17 per ton; poppy seed, \$7.90 per ton.

West Indies.—Rice and other grain, \$8.56 per ton.

Sailing vessels are now chartering at about \$5 per ton for United States ports, a great increase over a few months ago.

VAN LEER POLK,
Consul-General.

CALCUTTA, November 29, 1894.

WESTERN INDIA—BOMBAY.

OCEAN LINES.

British India Steam Navigation Company.—The following are the terminal points, taking Bombay as the central point: Bagdad, Zanzibar (African coast), Mauritius, London, Sydney, and Melbourne.

The main points touched on the Bombay-London route are Aden, Suez, Port Said, Malta or Naples, and Gibraltar; on the Bombay-Bagdad line, Kurrachee, Muscat, Bushire, Bassourah, and Bagdad; on the Bombay-Zanzibar line, Aden, Lamu, and Mombasa (African coast), and

Zanzibar; on the Bombay-Australian line, Colombo, Calcutta, Singapore, Batavia, Bushank, New Castle, Sydney, Melbourne, and Adelaide. Steamers run direct from Bombay to Mauritius Island.

The following points on the Indian coast are touched by the company's coasting steamers: Bombay northward to Kurrachee; southward to Mangalore, Tellicherry, Calicut, Cochin, Alleppey, Tuticorin, Colombo (north or east coast), Galle, Trincomalee, Negapatam, Pondicherry, Madras, Coconada, Bimlipatam, Gopaulpore, Flasepoint, and Calcutta.

The total length of the line is about 36,000 miles, and its general condition is all that can be desired.

This company has one hundred vessels, ranging from 244 to 5,450 gross tons. The nominal horsepower ranges from 90 to 700, according to the size of the steamer.

Frequency of communication: Bombay to Madras, Calcutta, Rangoon, etc., weekly (at Calcutta connect with steamer for Australia, New Zealand, and Tasmania, service monthly; at Madras connect with steamers for Penang, Singapore, etc., every two weeks); Bombay to Kurrachee, three steamers per week nine months of the year, two steamers per week for three months; Bombay to points on Persian and Arabian coast, Persian Gulf, weekly; Bombay to Zanzibar, monthly; Bombay to Mauritius, monthly; Bombay to London, via Kurrachee and Aden, every week.

Anchor Line.—Terminal points, Bombay and Liverpool; intermediate points touched, Aden, Ismailia, Port Said, and Gibraltar. Goods and passengers for the United States are transshipped at Liverpool or Gibraltar. Length of line, about 10,000 miles. Condition of the line, very good, nearly all the steamers being newly built. The fleet consists of seventeen steamers, ranging from 3,000 to 4,500 tons, and the nominal horsepower is 1,350 to 3,000, according to the size of the steamer. Communication, fortnightly.

Peninsular and Oriental Steam Navigation Company.—This company has a monopoly of the passenger traffic between Bombay and England and between Bombay and China. The termini are London, Shanghai, Yokohama, Melbourne, and Sydney. The main points touched from Bombay to London are Aden, Suez, Ismailia, Port Said, Brindisi, Malta, and Gibraltar. In the East the main points touched are Colombo, Penang, Singapore, Hongong, Shanghai, Hiogo, Nagasaki, and Yokohama. In the route to Australia the main points touched are Colombo, King George Sound, Adelaide, Melbourne, and Sydney. Connecting steamers are run to Genoa, Naples, Marseilles, and Alexandria. The line is in the best condition, being the great mail line between the East and England. The fleet consists of forty-nine vessels, with a total registered tonnage of 208,384 and a total effective horsepower of 213,550. Out of this fleet about twelve steamers are constantly in use on the Bombay line, so that the same steamer may not run twice

on the same route in one year; hence, figures as to the tonnage and horsepower on the Bombay line can not be given. The mail steamers can attain a speed of 15 to 19½ knots and the cargo steamers 10 to 14 knots per hour.

Communication from Bombay to London, and vice versa, weekly; Bombay to China and Japan, and vice versa, fortnightly; Bombay to Australia by China and Japan mail steamer, change at Colombo, fortnightly.

Florio and Rubattino United Steamship Company.—Termini: Venice and Genoa, Bombay and Hongkong. Main points touched: Homeward route, Aden, Suez, Port Said, Alexandria, Messina, Naples, and Genoa; eastward route, Colombo, Penang, Singapore, and Hongkong. The condition of the Bombay-Genoa line is very good, but the condition of the China-Bombay line is not so good. Three steamers are used for the Bombay-Genoa line, each having a net registered tonnage of 3,044 tons and 400 nominal horsepower, which attain a speed of 13 knots. There are two steamers on the Bombay-China line, each with a net registered tonnage of 1,650 tons and 200 nominal horsepower, which attain a speed of 10 knots. On both lines communication is monthly. Passengers and freight can be transshipped at Genoa for Buenos Ayres, St. Vincent, and Montevideo; service fortnightly. Freight for New York can also be transshipped at Genoa.

Austrian Lloyds Steam Navigation Company.—Termini: Trieste, Shanghai, and Kobe. Tickets can be bought for London, the passenger going by rail from Trieste or Brindisi to London. Intermediate points touched on the homeward route: Aden, Suez, Ismailia, Port Said, Brindisi, and Trieste; on the eastward route: Colombo, Penang, Singapore, Hongkong, Shanghai, and Kobe. The condition of the line is very good. It carries the Austrian mails. There are two steamers on the line from Bombay to Trieste, and five on the line from Kobe to Trieste, via Bombay. On the Bombay-Trieste line each steamer has a gross tonnage of 4,194 tons, and is 390 feet long. On the Kobe-Trieste line (via Bombay) each steamer has a gross tonnage of 4,400 tons. The steamers attain a speed of 13 knots per hour. The service on both lines is monthly.

Hall Line.—Termini: Bombay and Liverpool. Points touched en route are Kurrachee, Aden, Suez, Ismailia, Port Said, Marseilles, and Gibraltar. The length of the line is about 7,000 miles. The general condition of the line is good. The fleet consists of twelve steamers, plying between Bombay and London; tonnage of the steamers ranges from 3,000 to 4,100 gross tons, and nominal horsepower 400 to 500.

Messageries Maritimes.—Termini: Bombay, Marseilles, and Zanzibar. Main points touched en route to Marseilles are Kurrachee, Aden, Port Said, Suez, and Marseilles; en route to Zanzibar, Kurrachee, Aden, and Zanzibar. The steamers have a tonnage of from 2,300 to 4,200 gross tons and a horsepower of 2,000 to 3,400. Frequency of com-

munication: Bombay to Marseilles, monthly; Bombay to Zanzibar, monthly.

Japan Steamship Company.—Bombay and Kobe are the terminal points of the line, and the main points touched are Tuticorin, Colombo, Penang, Singapore, Hongkong, and Shanghai. The total length of the line is 5,340 miles. The general condition of the line is good. Four steamers are used and two held in reserve. The vessels have a tonnage of from 3,030 to 3,564 tons, and the horsepower ranges from 220 to 350. Communication, fortnightly.

Rates of first-class passage from Bombay.

To—	Lines.						
	Anchor.	Aus- trian Lloyds.	British- Indo Steam Navigation Com- pany.	Florio- Rubat- tino.	Messa- geries.	Hull.	Peninen- lar and Oriental Steam Navigation Com- pany.
Westward:							
Aden	\$53.43	\$54.75	\$48.59	\$50.35	\$67.46	\$53.23	\$76.92
Suez	98.12	113.35	.....	95.07	147.92	119.75	109.39
Port Said	93.12	119.82	148.44	97.68	147.92	133.28	169.39
Brindisi, Malta, and Gibrat- tar	146.34	161.93	.....	148.43	.....	.....	185.76
Trieste .....	.....	161.93	.....	.....	.....	.....	.....
Marseilles	146.34	.....	.....	148.43	186.00	149.58	185.76
London and Plymouth	α 188.27	α 210.52	195.85	.....	.....	186.26	α 202.80
Liverpool	155.77	.....	.....	.....	.....	159.66	.....
Hull .....	.....	.....	.....	.....	.....	.....	.....
Boston or New York	186.27	.....	.....	.....	.....	.....	244.16
Eastward:							
Colombo	21.56	32.17	28.98	21.56	.....	.....	26.98
Calcutta .....	.....	.....	60.97	.....	.....	.....	59.35
Penang and Singapore .....	.....	62.04	.....	.....	.....	.....	80.95
Hongkong .....	.....	94.41	.....	.....	.....	.....	113.58
Shanghai and Yokohama .....	.....	121.47	.....	.....	.....	.....	134.94
King George Sound .....	.....	.....	.....	.....	.....	.....	113.34
Melbourne and Sydney .....	.....	.....	168.92	.....	.....	.....	128.16

α Bombay to Brindisi by sea and thence to London by rail.

NOTE.—First-class passage by the Wilson Line from Bombay to Hull, \$145.98, and to Boston or New York, \$194.64.

First-class passage by the Japan Line from Bombay to Colombo, \$13.47; Penang and Singapore \$32.37; Hongkong, \$74.17; Shanghai, \$90.95; Kobe, \$86.59.

Via Colombo.....	1,067	1,546	1,802	6,486	7,483	7,973	8,588
Hogo:	467	856	1,202	7,356	8,363	8,843	9,408
Direct.....		589	736	7,565	8,560	9,045	9,605
Via Colombo.....		846					
Yokohama, via Colombo.....				8,249	9,234	9,734	9,994
King George Sound.....				8,285	9,270	9,770	10,030
Adelaide.....				1,007	1,492	2,052	2,612
Melbourne.....					485	1,045	1,590

a If via Plymouth, add 50 miles.

HIGHWAYS OF COMMERCE.

Distances between points on the Indian coast, in miles.

From—	Gopulpore.	Calingapatam.	Bimlipatam.	Visagapatam.	Cocanada.	Masulipatam.	Madras.	Pondicherry.	Cuddalore.	Nagapatam.	Galle.	Colombo.	Tuticortin.	Colachel.	Alleppey.	Cochin.	Calicut.	Tellicherry.	Cannanore.	Mangalore.	Bombay.
Rangoon	755	525	860	897	972	1,078	1,318	1,398	1,415	1,475	1,915	1,985	2,135	2,240	2,340	2,375	2,460	2,485	2,505	2,585	2,975
Calcutta	335	405	460	477	552	658	898	978	995	1,055	1,495	1,565	1,715	1,815	1,920	1,965	2,040	2,075	2,068	2,165	2,555
Gopulpore		70	125	142	217	323	563	643	660	720	1,160	1,230	1,380	1,485	1,585	1,620	1,705	1,740	1,753	1,830	2,220
Calingapatam			55	72	147	253	493	573	590	650	1,090	1,160	1,310	1,415	1,515	1,550	1,635	1,670	1,683	1,760	2,150
Bimlipatam				17	92	198	438	518	535	595	1,035	1,105	1,255	1,360	1,460	1,495	1,580	1,615	1,628	1,705	2,095
Visagapatam					75	181	421	501	518	578	1,018	1,088	1,238	1,343	1,443	1,478	1,563	1,598	1,611	1,688	2,078
Cocanada						106	346	426	443	503	943	1,013	1,163	1,268	1,368	1,403	1,488	1,523	1,536	1,613	2,008
Masulipatam							240	320	337	397	837	907	1,057	1,162	1,262	1,297	1,382	1,417	1,430	1,507	1,897
Madras								80	97	157	597	667	817	922	1,022	1,057	1,142	1,177	1,190	1,267	1,657
Pondicherry									17	77	517	587	737	842	942	977	1,062	1,097	1,110	1,187	1,577
Cuddalore										60	560	570	720	825	925	960	1,045	1,080	1,093	1,170	1,560
Nagapatam											440	510	660	765	865	900	985	1,020	1,033	1,110	1,500
Galle												70	220	325	425	460	545	580	593	670	1,060
Colombo													150	255	355	390	475	510	523	600	990
Tuticortin														105	205	240	325	360	373	450	840
Colachel															100	135	220	255	268	345	735
Alleppey																35	120	155	168	245	635
Cochin																	85	120	133	210	600
Calicut																		35	48	135	515
Tellicherry																			13	90	480
Cannanore																				77	467
Mangalore																					390

—to—

Distances from Bombay to points on the Persian and Arabian coast, etc., in miles.

From—	To—										
	Kurrachee.	Gwdnar.	Muscat.	Jask.	Bunder Abbas.	Linga.	Bahrein.	Busheer.	Fao.	Buereh.	Bagdad.
Bombay	500	760	990	1,125	1,255	1,365	1,610	1,780	1,920	1,975	2,475
Kurrachee		260	490	625	755	865	1,110	1,280	1,420	1,475	1,975
Gwdnar			230	365	495	605	850	1,020	1,160	1,215	1,715
Muscat				185	315	425	670	790	930	985	1,485
Jask					130	240	485	655	785	850	1,350
Bunder Abbas						110	355	525	665	720	1,220
Linga							245	415	545	610	1,110
Bahrein								170	310	365	865
Busheer									140	195	695
Fao										55	555
Buereh											500
Bagdad											

Miles.

Bombay to Mauritius direct 2,610
 Bombay to Zanzibar direct 2,200

RAILWAYS.

Two railways enter Bombay, the Great Indian Peninsula Railway and the Bombay, Baroda and Central India Railway.

Great Indian Peninsula Railway.—This line is 1,288½ miles long. The termini are Bombay, Raichore Junction (with Madras Railway for Madras), Jubalpore Junction (with East India Railway for Calcutta), Poona Junction (with the Bengal-Nagpur Railway for Assensol Junction), and Poona (change here to Southern Mahratta Railway). The road, with connections, is the great mail route between Bombay, Calcutta, and Madras.

The condition of the line is good. The line is double track, except at the minor branch roads. Passenger rates, 12 pice (1½ cents) per mile.

The Bombay-Raichore line, in crossing a chain of mountains, the rails are turned back on themselves, and 2 miles farther on there is a line of tunnels. The depot at the Bombay terminus cost \$3,000,000.

Bombay, Baroda and Central India Railway.—This road, including the Ajmer-Malwa Railway, is 890 miles long. The termini are Bombay, Baroda, and Delhi.

Passenger rates, about 12 pice (1½ cents) per mile.

No obstacles of any importance were met in the construction of this

Southern Mahratta Railway.—This road is under control of the Government.

The termini are Poona, on the north; Naryangod, on the south; Solapur, on the east; Hotgi, on the northeast; Castlerock, on the south; and Kolhapur, on the northwest. The total length of the line is 553.21 miles. The condition of the line is good. It is single track.

The rate for first-class passengers is 12 pice (1½ cents) per mile, and freight is carried at the rate of 7.54 pice (1 cent) per ton per mile.

There were no great obstacles to be overcome in the building of the line. There are only two tunnels, and the grade there is 1 in 40.

Indian Midland Railway.—This road is under the control of the Government, though worked by a company. The termini are Agra, on the north; Cawnpore, on the northeast, Manikpur, on the east, and Itarsi Junction, on the south. At Itarsi Junction it connects with the Great Indian Peninsula Railway from Bombay. The total length of the line is 677 miles. The condition of the line is good. It is single track.

The first-class passenger rates are 12 pice (1½ cents) per mile.

The obstacles on the line were such as had to be overcome by bridging, as follows: (1) At Nurbudda, 14 spans of 150-foot and 10 spans of 60-foot girders; (2) at Betwa, 9 spans of 150-foot girders; (3) at Chumbal, 12 spans of 200-foot and 20 spans of 20-foot girders; (4) at Jumna, 10 spans of 250-foot girders; (5) at Dassau, 13 spans of 100-foot girders; (6) at Kem, 1 span of 250-foot and 12 spans of 100-foot girders.

HIGHWAYS.

There are many military roads in India, about 30 to 50 feet wide, made of stone, dirt, and gravel.

I can give no detailed information regarding roads, but they are all in good repair (more or less), and one can go from town to town in a carriage or on a bicycle with ease and comfort.

I can gather no information regarding navigable rivers and canal lines.

H. J. SOMMER, Jr.,

Consul.

BOMBAY, September 22, 1894.

CEYLON.

OCEAN LINES.

Peninsular and Oriental Steam Navigation Company.—To and from England, India, Australia, and Far East ports.

British India Company.—To and from England, India, Australia, Burmah, Java, and to Mauritius.

Messageries Maritimes Company.—To and from France, India, Australia, and Far East ports.

North German Lloyds Company.—To and from Germany, Great Britain, Australia, and Far East ports.

Bibbe Company.—To and from Great Britain and Rangoon.

Orient Company.—To and from England and Australia.

Ocean Steamship Company.—To and from England and Far East ports.

Henderson's Line, City Line, Clan Line, Glen Line, and Anchor Line.—To and from India and England.

Austrian Lloyds.—To and from Trieste, India, and Far East ports.

Rubattino Company.—To and from Spain and Manila.

Russian Volunteer Fleet.—To and from Vladivostok (Russia) and Indian ports.

Nipon Yusen Kaisha Steam Navigation Company (Japanese).—To and from Japan and Bombay.

Asiatic Steamship Company.—To and from Indian ports.

Deutsche Australische Dampfschiff Gesellschaft.—To and from Europe and Australia.

Hamburg Line.—To and from Europe and Calcutta.

Ceylon Steamship Company.—Two steamers make weekly trips around the island.

Hundreds of transient (tramp) steamers to and from all parts of the world.

The total steamship tonnage of Ceylon in 1893 was: Inward, 2,789,775; outward, 2,778,775.

HIGHWAYS.

Mr. R. K. MacBride, director of public works in Ceylon (see Special Annual Reports, "Streets and Highways of Foreign Countries," 1891), stated that the extent of roads open in Ceylon in 1890 was 3,142 miles, divided as follows, viz: Metaled roads, 1,634.80 miles; graveled roads, 1,407.20 miles, and natural roads—i. e., roads made mostly by the traffic themselves—541.90 miles.

Through the director's courtesy I now learn that the extent of roads open in 1891 was: Metaled, 2,122.06; graveled, 744.03; natural, 541.82; total, 3,407.91 miles. And as Mr. MacBride's report in 1891 about exhausts the details of construction, maintenance, cost, etc., I think I can not do better than refer inquiring minds to that paper; but I would add that the metaled roads of Ceylon are, up-country, 16 feet broad, exclusive of drains, though in a few localities where the traffic is uncommensurate the width is 24 feet; low-country roads are about 20 feet broad and all are thoroughly macadamized.

RAILWAYS.

As reported upon Ceylon railroads in May, 1888, the extensions of 43 miles, and to Haputala, 26 miles, in the low country and up-country zones, respectively, have been opened for traffic, and a new line, Polgahawela to Kurunegala, 13 miles, has been built.

Regarding the extension to Galle, it probably will pay 3 per cent net return on invested capital; but the Haputala extension has, I understand, proved, as I feared it would, unremunerative; and I respectfully

suggest, if the Government sees fit to publish this report, that the portion of my 1888 report¹ under heading "Nanuoya to Haputala—Extension" may be herein reproduced, and also as much of that report respecting physical aspects and engineering features of Ceylon railways in general as may seem desirable.

The present main lines of railway are as follows:

	Miles.
Colombo to Banderawella.....	163
Kandy to Matala.....	17
Colombo to Galle.....	71
Polgahawela to Kurunegala.....	13

These are all single-track lines, the roadway being 20 feet broad except in rock, where it is 18 feet; weight of rails, 72 pounds per yard; gauge, 5 feet 6 inches; sleepers, 9 feet 6 inches long, 10 by 5 inches square, creosoted, and completely buried for protection from the sun and rain; average distance apart, 3 feet, two additional sleepers being added for every length of rail on heavy grades. Stations on up-country lines average about 7 miles apart; on seaside line, about 2½ miles.

The Government owns and controls all the railways in Ceylon, and they are in excellent condition.

W. MOREY,
Consul.

COLOMBO, *May 16, 1895.*

RAILWAYS IN CEYLON IN 1888.

[Republished from Consular Reports, No. 96.]

There are 182½ miles of railway in operation in Ceylon, all of 5 feet 6 inches gauge, viz: Colombo to Kandy, 74½ miles; Peradeniya to Nanuoya, 58½ miles; Colombo to Kalutara, 27¾ miles; Wharf and Breakwater branch, 4¼ miles; Peradeniya to Matala, 17½ miles.

The line from Colombo to Kandy was opened for through traffic in 1867, and the Peradeniya and Nanuoya line in the following years, viz: To Gampola in 1873, to Nawalapitiya in 1874, to Talawakele in 1884, and to Nanuoya in 1885.

The line from Kandy to Matala was opened for traffic in 1880. All the railways except the Colombo and Kalutara and the Wharf and Breakwater lines (32 miles) penetrate the central province, which contains a moiety of the estates owned by European planters, whose interests they most directly subserve. These lines are owned and worked by the Government, and were built by capital borrowed in England, as also were all the other lines above enumerated. The cost of the up-country lines was 220,457 rupees per mile, which, considering that half of the money was expended when the currency was 10 rupees to the pound sterling and the remainder at 1s. 9d. per rupee, may be calculated at

¹ See "Railways of Ceylon in 1888," immediately following this report.

45 cents per rupee, giving a total in United States money of \$99,206 per mile. This includes every item of cost, from permanent way to workshops, rolling stock, stations, etc. All are single-track lines, and the sleepers, mostly of Norway pine, creosoted, are completely buried, so as to protect them from the sun and rain.

The formation width is 20 feet, though the rock cuttings are reduced to 18 feet; weight of rails, 72 pounds per yard; gauge, 5 feet 6 inches; sleepers, 9 feet 9 inches long, 10 by 5 inches square, and 3 feet apart, except on inclines, where two are added for every length of rail.

Engineering difficulties.—The length of the Kaduganawa incline, between Rambukana and Kandy, is 12 miles, and the gradient 1 in 45, with 10-chain curves. There are ten tunnels, the longest being 365 yards. The steepest gradients are between Nawalapitiya and Nanuoya, here, in some instances, they are 1 in 44, the sharpest curves being 5 chains. The highest altitude reached is 5,300 feet above sea level, at Nanuoya, which place, measured on the map as the crow flies, is 36 miles from Rambukana, the latter being 53 miles from Colombo and 1,000 feet above sea level, and here the steep ascent practically begins; whereas the actual mileage traversed by the railway between Rambukana and Nanuoya is 78 miles and the rise about 5,000 feet. These figures better represent the precipitous and tortuous character of the line than anything I can write on the subject.

The branch line to Matale (17½ miles) has no marked feature except a girder bridge, 664 feet long, on five piers, crossing the Mahaweli River, the cost of which was \$65,000. The stations are about 4½ miles apart, those on the main line from Colombo to Nanuoya averaging about 6 miles apart. This line taps a worn-out coffee district, the industry of which may be tobacco. The lines from Colombo to Peradeniya, from Peradeniya to Nawalapitiya, and the seaside lines, totaling 123 miles, are now the unencumbered property of the Government, the total cost having been paid off in 1884. At the present time, however, the other up-country lines (59 miles) can scarcely be said to be paying at an appreciable profit, though the general manager of the railway informs me that there is likely to be an improvement in this respect this year. The section from Peradeniya to Nawalapitiya (34 miles) may be yielding upward of 3 per cent on the invested capital, but the Matale line and the extension to Nanuoya are profitless, a circumstance owing mostly to the immense cost of their construction, the lines not yet penetrate affording no commensurate amount of traffic to justify the outlay.

Speed. (speed, 15 miles per hour, including stoppages).—As previously intimated, the line from Colombo to Kalutara (27¾ miles) is of broad gauge of 5 feet 6 inches, the stations being 16 in number, averaging a little under 2 miles apart. It is devoted almost entirely to passenger traffic, and is a stupendous structure for that; nevertheless, it pays a steady profit of about 3 per cent upon

the invested capital, viz, 2,185,912 rupees, or 78,771 rupees per mile; say, in United States money, \$984,660 and \$35,446, respectively.

This line, running on an almost dead level, closely follows the seashore, and skirts a thickly populated country abounding in cocoanuts and other fruits and arrack, and containing several prosperous towns and villages where much handicraft work, such as carpentering, coopering, gold and silver smithing, precious-stone cutting, etc., is done. Its ultimate destination is probably Point de Galle, or perhaps farther on to Hambantota, at present an isolated place on the southeast coast, 75 miles from Galle and 147 from Colombo, but, nevertheless, if given transport facilities, the natural outlet of the present populous district of Uva. As before stated, no goods except parcels are conveyed by this seaside line, which, from its colossal character, both in permanent way and rolling stock, is fit to carry the commerce of a continent. The passenger fares amount to about 3 cents per mile for first class, 2 cents for second class, and 1 cent for third class, United States money.

The principal engineering features of this line are an iron bridge across the lagoon at Panadura, having a clear waterway of 600 feet, and another iron girder bridge across the Kalugauga (Black River) at Kalutara, 12,000 feet long, divided into two equal sections by a small island in the river. This bridge cost \$300,000.

FARES AND TRAFFIC ON UP-COUNTRY LINES.

Passenger fares from Colombo to Kandy (72 miles) amount to about 4 cents per mile for first class, 3 cents for second class, and 1½ cents for third class, United States money.

The Matala line fares are about the same, but those on the Peradeniya-Nanuoya extension are 5 cents per mile for first class, 3½ cents for second class, and 1½ cents for third class, United States money. This being a purely local and domestic matter, into which the element of exchange scarcely enters, I have converted the local currency into United States currency at the rate of 45 cents per rupee; calculated on a gold basis, the amount of the fares would bear a reduction of at least another 10 per cent.

Goods are divided into three classes and charged accordingly. There are also special rates for certain products, viz, coffee, cinchona, tea, etc., mostly the products of plantations belonging to Europeans, and live stock.

The total profits earned on all the railway lines at present in operation here is about 3 per cent on the invested capital, which, it is to be feared, is not likely to be appreciably increased so long as the present expensive broad-gauge system is adhered to. Briefly stated, the broad-gauge railways of this country have, in my judgment, proved a positive incubus to the island, excepting perhaps the line to Kandy, beyond which place the system never ought to have been extended.

LINES PROJECTED AND SURVEYED.

At present there is no railway construction in progress, but the following lines have been surveyed, viz: Kandy to Badulla, 3 foot 6 inch gauge, 62½ miles, cost not estimated; Nanuoya to Haputale, 5 foot 6 inch gauge, 26 miles, \$3,013,000; Mahara to Chilaw, 5 foot 6 inch gauge, 40 miles, \$1,150,000; Mahara to Chilaw, 3 foot 3¾ inch gauge, 40 miles, including mixed gauge to Colombo, \$1,200,000; Kalutara to Bentota, 5 foot 6 inch gauge, 9 miles, no published particulars; Mahara to Jaffna, 33 miles, no published particulars; Mattakuliya to Colombo (tramway), 13 miles, \$271,000.

The first of the above named, called "Lower Badulla route," passes through a mostly barren, unhealthy, and somewhat precipitous line of country, sparsely populated, and offering few attractions to agriculturists—probably its construction is not seriously contemplated by the Government. Nevertheless, it is the most practicable route by which to tap Badulla, and thus connect the Province of Uva by rail with Colombo, besides affording the preliminary for a scheme of narrow-gauge railways across the island to the fertile districts of Batticaloa and other important places on the eastern side of the island.

Nanuoya to Haputale.—A line upon the Lartique or some other economical system could be built over the Lower Badulla route for about 26 miles, approximately, of the estimated cost, \$3,013,000, of the proposed broad-gauge extension of 26 miles to Haputale, which, after all, only partially penetrates and only serves a fraction of the Province of Uva, all of the plantations of which are not likely to produce annually in the near future, for railway transport, more than 7,000 tons of produce, principally coffee, cinchona, and tea, at least one-third, per cent, of which may never seek the line in question unless it is extended another 28 miles to Badulla. The up traffic will probably not exceed 15,000 tons, which, together with a possible 7,000 tons down, makes a total of 22,000 tons, though a commission has estimated it at 30,000 tons sure, whereas even the 22,000 tons I estimate are somewhat precarious and largely dependent on future development.

Nevertheless, this expensive extension has now been sanctioned by the Colonial Government and may very soon be in process of construction. It may be well to add that the district it will only partially penetrate contains all together about 40,000 acres, nominally under tea, coffee, and coffee cultivation, the last-named product fast disappearing. The total inhabitants number about 170,000. Two hundred and fifty of these are Europeans, mostly planters, who overlook about 150,000 coolie laborers. Probably another 10,000 natives are engaged in trade, cart transport, and other miscellaneous occupations, the produce of which are all consumed within the province. The climate is very favorable, but the arable land is not extensive and even now is largely occupied. That the wealth of the 125,000 people, of all

ages, engaged in native agriculture will be increased or their condition improved economically by this railway extension is more than doubtful, for, alas, past experience indicates, throughout the central provinces, the contrary. As a matter of fact, there is not an interior district of this island except Kandy that has been tapped or even approached by a railroad where, after ten years' experience, the natives are not much worse off than they were before, and I wish I could believe that the present project will result differently. If the intention were to continue the broad-gauge extension on to Passara as a final terminus of that system, from which cheaper and more practical lines could radiate across districts urgently requiring them, I could see some utility in the project; as it now appears, however, I see nothing in it but a mistake.

That new enterprises will be born of this extension or old ones within the province be so stimulated as to lead to a materially increased consumption of or demand for American manufactures I do not believe; nevertheless, there might be such a change in native agricultural methods as would create a demand for some of our farming implements.

Mahara to Chilaw.—Mahara is a station on the line to Kandy, 9 miles from Colombo, and Chilaw is a town or hamlet situated on the west coast of the island, 48 miles from Colombo. The intervening country, containing about 170,000 inhabitants, is flat throughout, and for upward of 30 miles from Colombo abounds in fine cinnamon and cocoanut plantations. North and east of Chilaw, in the neighborhood of Puttalam, there are fine forests of valuable timber, ebony, satinwood, etc., and the contiguous land is probably better than the average in Ceylon for agriculture. Cotton and tobacco are as likely to succeed there as anywhere else in the island, I should think, and a comparatively inexpensive line of light railway would prove a great boon and a good investment by opening up the country, for it could be continued on to Puttalam, 42 miles farther up the coast, and thence across the island, through Anuradhapura, or on to Jaffna, in the northern province, thereby effecting easy communication with that enterprising place, and affording transportation for what is likely to prove, under the revival of the ancient irrigation system, the most fruitful district in Ceylon.

The line to Chilaw (40 miles as at present surveyed) is conceived entirely in the interests of the broad-gauge system, and is estimated to cost 3,411,997 rupees, or 84,384 rupees per mile. There is also an estimate for a meter-gauge line, with a continuation of 9 miles, from Mahara to Colombo, amounting to 3,627,980 rupees, or 89,739 rupees per mile, which probably could be greatly modified. The goods traffic is estimated at 74,000 tons, which would probably be exceeded.

Kalutara to Bentota.—This will be a mere continuation for 9 miles of the seaside line already described. It could probably be built for less than 50,000 rupees per mile, but is likely to cost at least 70,000 rupees per mile.

Matale to Jaffna (183 miles).—This would connect with the present broad-gauge line at Matale, and open up communication between Colombo and Jaffna, via Kandy and Anuradhapura, involving an ascent of 1,700 feet to Kandy and a corresponding descent from Kandy to Colombo; whereas the Chilaw line, if constructed and continued on as hereinbefore suggested, would run mostly upon a level, accommodate a much greater population, and serve a larger extent of virgin country.

Colombo City Line.—The proposed tramway from Mattakkuliya to Colombo ($4\frac{1}{2}$ miles), estimated to cost 741,298 rupees, or \$296,500, has remained unconsidered for years. A few days since, however, the Colombo municipal council resumed consideration of the subject.

CONCLUSION.

From all I can learn from observation and the literary annals of railways here, * * * the present penchant for expensive broad-gauge lines stops the way to that future development which ought to cover the whole country with a network of iron rails on the cheapest system that has been found to be serviceable elsewhere under similar conditions.

The country is rich in undeveloped and possible products, but financially poor. There probably is not the cash equivalent of \$10,000,000 in the whole island. There is, however, notwithstanding admirable administration, which must be admitted, as much pomp and circumstance with respect to railroading, so far as it has progressed, as would serve the richest community in the world, and the mass of the people groan under it.

The total cost of the 182 $\frac{1}{2}$ miles in operation was, exclusive of interest, 35,924,738 rupees, or \$16,166,132 in gold. It is, in my opinion, unreasonable for a people so poor in treasure to pay so much money for so little railroad, and the present railway debt, owed abroad, amounting to £1,253,000, or \$6,266,000, at 4 per cent interest, should not, I think, be increased by further construction at the cost at present prevailing.

To support this proposition, I would respectfully point out that the railway debt aforesaid, bearing 4 per cent interest, is for only 59 miles of railroad, which is not yielding any appreciable profit, a state of affairs, it is to be feared, very unlikely to be remedied by building another 26 miles, at a cost of \$2,750,000, to carry perhaps 22,000 tons of traffic.

Doubtless the present Government would dislike, in giving to Uva the railway facilities its European denizens have long pined and agitated for, to put an attenuated tail, or less consequential line, upon the imposing structure its predecessors have carried so far in that direction, and time only will show whether or not such a sentiment, if it does exist, is justifiable economically.

W. MOREY,
Consul.

CEYLON, May 18, 1888:

STRAITS SETTLEMENTS.

The Malay Peninsula, in which the consular district of Singapore is situated, lies within the wake of traffic and travel between Europe, China, and Japan. All the more important outward and homeward bound steamers engaged in this great trade put in here to coal, discharge and take on mails, passengers, and freight, and here meet connecting steamers to British India, Siam, Burmah, the Netherlands Indies, Borneo, the Philippines, and the various points along the Malayan coast.

OCEAN LINES.

The great ocean lines connecting Singapore with the European ports and those of the Far East are:

- (1) Compagnie des Messageries Maritimes.
- (2) Peninsular and Oriental Steam Navigation Company.
- (3) Norddeutscher Lloyd.
- (4) Austrian Lloyds Steam Navigation Company.
- (5) Compañia Transatlantica.
- (6) Deutsche Dampfschiffs Rhederei.
- (7) Ocean Steamship Company.
- (8) Glen Line of steam packets.
- (9) Ben Line.
- (10) China Mutual Steam Navigation Company, Limited.

The first five only are under regular mail contract. The following are the accessible details of the various lines:

Compagnie des Messageries Maritimes.—I am indebted to M. de Bure, the agent at Singapore, for the information herewith given concerning this line.

The Messageries Maritimes de France is constituted as a joint stock company, with a capital of 60,000,000 francs, fully paid up. The central office is situated at Paris. Another office, established at Marseilles, under the name of "Direction de l'Exploitation," regulates the working of the lines which have their headquarters in that port—India, China, and Japan line, Australia line, East Africa line, and Mediterranean and Black Sea lines. A general agency at Bordeaux manages the South American line, and a general agency is also established at London.

By a convention with the French Government, the company is in charge of the French postal service on the China, Australia, and East Africa lines, as well as on some of the Mediterranean lines. For this service the company receives a subsidy, in exchange for which certain conditions known as *cassier des charges* are accepted. On each steamer of the main lines a mail agent (*agent des postes*) takes passage. Besides his duties in connection with the receipt and delivery of mails in every port, he has also, as a "commissary of the Government," control in the working of the line with respect to the regular execution of the postal contract.

The China mail line, steamers of which call at Singapore, starts from Marseilles, calling at Alexandria, Port Said, Suez, Aden, Colombo, Singapore, Saigon, Hongkong, Shanghai, Nagasaki, and, via the Inland Sea, at Kobe and Yokohama. The passage from Marseilles to Japan is made without any transshipment and by same steamer. The steamers leave Marseilles every two weeks, on Sunday afternoon, taking mails from London dated Saturday morning and French mails dated Saturday night. At Colombo every four weeks connection is made with a steamer running to Pondicherry, Madras, and Calcutta, and at Singapore with a steamer running every fortnight to Batavia and to Samarang every twenty-eight days.

Every mail steamer connects at Saigon with the Annam and Tonkin branch line, the principal ports of which are Quinhon, Tourane, and Haiphong, the terminus.

A branch line, subsidized by the Indo-Chinese colonial government, runs between Saigon and Singapore, connecting here with every English fortnightly mail.

On the return voyage from Yokohama, the mail steamer, on arrival at Shanghai, transships to the preceding vessel her passengers, mails, and valuable cargo, and remains a fortnight there, when she leaves again homeward with the transshipment brought in by the following steamer from Japan.

The total length of the line covered from Marseilles to Yokohama is 10,135 miles, distributed between ports of call as follows:

From—	To—	Miles.	From—	To—	Miles.
Marseilles	Alexandria.....	1,408	Colombo.....	Singapore.....	1,570
Alexandria.....	Port Said.....	160	Singapore.....	Saigon.....	637
Port Said.....	Suez.....	87	Saigon.....	Hongkong.....	915
Suez.....	Aden.....	1,308	Hongkong.....	Shanghai.....	870
Aden.....	Colombo.....	2,095	Shanghai.....	Yokohama.....	1,085

The Colombo-Calcutta line covers 1,420 miles; and the distance from Marseilles to Calcutta is 6,478 miles. The Singapore-Batavia run is 550 miles; and the Singapore-Samarang run, 790 miles; the distance from Marseilles to Samarang being 7,418 miles. The course of the Tonkin branch line is 893 miles, and from Marseilles to Haiphong the distance is 8,158 miles.

The steamers have been, with a few exceptions, built in the company's own yards at La Ciotat, between Marseilles and Toulon. They are always kept in perfect condition and have every modern appliance to secure safety and comfort. Their rating by the insurance companies is the highest and the premium on goods shipped by them smaller than by other cargo lines.

The fleet of the company now numbers fifty-five vessels, viz:

Name.	Gross tonnage.	Horse-power.	Name.	Gross tonnage.	Horse-power.
a, China, and Japan mail			River Plate and Brazil line:		
oceanien	4,259	3,400	Plata	5,076	5,400
Carra	4,255	3,400	Bresil	5,809	5,400
Malazie	4,255	3,400	Portugal	5,430	4,800
Sydney	4,232	3,400	Equateur	3,856	2,900
aledonien	4,232	3,400	Congo	3,832	2,900
Elbourne	4,080	3,400	Orenoque	3,831	2,900
atal	4,070	3,400	Dordoque	3,750	2,200
ighalien	4,050	2,900	Cargo vessels:		
xus	3,970	2,900	Charente	3,774	2,200
ia branch:			Adour	3,730	2,200
adavery	1,480	1,600	Ortegal	3,656	1,900
ta branch:			Corduan	3,679	1,900
idau	1,852	1,400	Matapan	3,656	1,900
ingapore branch:			Medoc	3,655	1,000
bre	1,838	1,600	Mediterranean and Black Sea		
line:			lines:		
ethuse	1,246	1,400	Yangtse	3,791	2,900
mise	2,333	1,400	Djemnah	3,785	2,900
iphong	1,548	1,400	Traonaddy	3,785	2,900
lia and New Caledonia			Niger	3,726	2,900
mand Behic.....	6,548	7,000	Gironde	3,260	2,900
ynesien	6,562	7,000	Senegal	3,716	2,900
ralien	6,563	7,000	Tigre	3,234	1,400
e de la Ciotat.....	6,542	7,000	Cambodge.....	2,599	1,400
ais	1,824	1,600	Uerthe	3,718	2,900
rica line:			La Bourdonnais.....	2,045	1,600
o	3,350	2,400	Alphée	1,960	1,400
zone	3,392	2,400	Erymanthe.....	2,095	1,400
h	3,361	2,400	Manche	2,315	1,400
ine:			Guadalquivir.....	2,638	1,400
injaka	684	450	Guadiana	2,632	1,400
			Douro	2,745	1,400
			Total*	192,101	150,150

Following are not noted in the list: The La Seyne, of 2,353 tons and 2,000 horsepower, and two of 6,000 horsepower each, in course of construction. They are to connect at Aden with the Indian and East Africa lines.

The following are the local rates of passage in Mexican dollars as charged by the Singapore agency :

From Singapore to—	First class.	Second class.	Third class.	From Singapore to—	First class.	Second class.	Third class.
Saigon.....	\$50	\$38	\$20	Madras.....	\$140	\$95	\$53
Hongkong.....	75	50	27	Calcutta.....	170	112	63
Shanghai.....	125	80	45	Aden.....	250	200	95
Kobe and Nagasaki.....	130	85	50	Sues.....	385	257	142
Yokohama.....	138	92	52	Port Said.....	400	262	145
Batavia.....	60	45	25	Alexandria.....	405	270	150
Samarang.....	90	65	40	Marseilles.....	440	280	157
Colombo.....	112	75	42	London (by mail).....	470	305	-----
Pondicherry.....	130	87	50				

During the year 1893 the number of passengers booked at Singapore was 1,969. The general service, as well as the meals, which are of the best French style, are greatly appreciated by passengers. Each steamer carries a surgeon, and all the stewards and stewardesses are European.

Baggage is stored in a special hold and convenient of access at any time.

The first-class cabins have two or three berths, and the second-class cabins four berths. Bedding and linen are supplied to all passengers.

On the homeward voyages, from February to June, the vessels generally have full passenger lists, and also during the outward season from September to December. Freight rates are governed by the market, and are subject to frequent fluctuations, varying almost every week, so it is not possible to quote any rates from this port. The homeward freight rates are always quoted in sterling and paid here at the rate of exchange on demand on the date of shipping.

During the year 1893, 175,442 packages were shipped. The vessels generally secure full cargoes in Japan, China, and Saigon, leaving but little room available for cargo at Singapore.

Peninsular and Oriental Steam Navigation Company.—This is a private association, with ships of about the same capacity as those of the Messageries Maritimes line. They are well managed, make good time, and possess, according to those who travel upon them, all modern conveniences. The cooking, however, is not as well suited to the non-British palate as that of the French liners, and they do not, as the latter, supply passengers with wine at meals free of charge.

The Peninsular and Oriental Line is under contract with the Government of Great Britain to carry mails, and has, in conjunction with its other important lines, one between Europe, China, and Japan, the steamers of which, leaving London every fortnight for Yokohama, and vice versa, call en route at Singapore, where, by alternating with the steamers of the Messageries Maritimes, it constitutes with the latter the regular direct weekly mail service to and from this point east and west.

Norddeutscher Lloyd and Austrian Lloyd.—These lines, also subsidized by their respective Governments for mail service, have first-class modern steamers, under good management.

The route of the former is from Bremerhaven to Shanghai, and vice versa, with connections from Hongkong to Yokohama and from Singapore to the Netherlands Indies and German New Guinea, with stops at various points.

The route of the latter is from Trieste, via Port Said, Suez, Aden, Bombay, Colombo, Penang, Singapore, Hongkong, and Shanghai, to Kobe (Japan), and vice versa.

The vessels of these lines call here once a month.

Compañia Transatlantica.—The steamers of this line, subsidized by the Spanish Government, run from Barcelona to Manila and back, touching at Singapore and other points, calling here once a month. The vessels of this company are in good repute.

Other Ocean Lines.—The only other through ocean lines of importance calling here are the Deutsche Dampfschiffs Rhederei, the Ocean Steamship Company, the Glen Line of steam packets, the China Mutual Steam Navigation Company, Limited, and the Ben Line. These lines are principally freight carriers and none are under regular government contract for carrying mails.

LINES TO ADJACENT STATES AND COLONIES.

British India Steam Navigation Company, Limited.—This is an important and well-managed line, running weekly mail steamers from Singapore, via Rangoon, to Calcutta and return, with connecting steamers to Bombay, which call at the various Indian ports en route.

Koninklijke Paketraart Maatschappij.—This is a noted Dutch association, with a capital of \$3,750,000, having, in addition to its other lines, first-class, well-appointed steamers running a regular passenger, mail, and freight service between Singapore and Batavia and other ports of the Netherlands Indies, as will be seen in the following very complete port by its agent here, Mr. M. G. van der Burg:

The Koninklijke Paketraart Maatschappij (Royal Packet Navigation Company) is a private company, under contract with the colonial government of Netherlands India for the conveying of Government passengers and goods, army and navy stores,

In case of war the steamers are to be used as Government transports. The company's capital is 6,000,000 florins, with 3,000,000 florins in bonds, a total of £750,000. The fleet consists of thirty-one steamers, aggregating 32,488 tons. The ships are built with a view to comfort of passengers and are fitted accordingly with roomy saloons and airy cabins, refrigerating machines, etc. They are of the awning-deck type, affording a spacious and cool quarter-deck. Fourteen are fitted with electric lights. The average speed is 10 knots, but 12 and 13 knots are attained on the main

The following are the regular lines in the Netherlands India Archipelago:

From Batavia: Fortnightly, via Telok, Betong, Kroe, Bencoolen, Tadang, Oleh (Acheen), Segli, and Edi, to Penang, and back to Batavia via the same ports, the west coast of Sumatra. Every three months the isolated island of Engano is visited.

Every four weeks, via Telok, Betong, Kroe, Bencoolen, Padang, Priaman, Ayer, Besi, Natal, Siboga, Baros, Singkel, Gunong, Sitolie (Nias), Truman, Tompat, Susu, Analabu, Pulo, Raja, Oleh-leh (Acheen), Segli, Tolok, Sewawe, Edi, and Singapore back to Batavia. The return voyage is made by a steamer from Batavia in the opposite direction, calling at Singapore first, where the ships

(2) From Singapore every four weeks, via Penang, Oleh-leh, Pulo, Raja, Analaboe, Gunong, Sitolie, Singkel, Baros, Siboga, to Padang, and back to Singapore. At Padang and Singapore these steamers connect directly with service to Batavia.

(3) From Batavia weekly to Singapore and back, calling once every fortnight, out and home, at Muntok (island of Bangka) and Rhis, the capital of the Rhis-Luigga Archipelago, and carrying the fortnightly Peninsular and Oriental mail to and from Batavia. This line also connects with the French mail to and from Singapore.

(4) From Batavia, twice a month, via Muntok (Bangka), to Palembang (Sumatra) and back to Batavia via same places. Once every four weeks, via Muntok, Palembang, Muara Saba, and Simpang, to Djambi, and back to Batavia via same ports.

(5) From Batavia, once every fortnight, to Belawan-Deli, the tobacco district on the east coast of Sumatra, and back.

From Singapore to Deli, once a fortnight, via the tobacco district ports, Paneh, Bilah, and Asahan. Bangkalis and Siak are also called at once a month.

(6) From Batavia, once every four weeks, to Pontianak, the Dutch capital of the west coast of Borneo, calling en route, on the outward and homeward voyage, at the island of Billiton, where extensive tin mines are worked.

(7) From Batavia, once a week, via Samarang, the capital of central Java, for Sourabaya, the commercial center of the Netherlands India. The trip is made in fifty hours, including a ten-hours stop at Samarang.

From Batavia, weekly, to Sourabaya, via Cheribon, Tegal, Pecalongan, and Samarang. This trip takes sixty-eight hours, including eighteen hours' detention at the four ports touched en route.

(8) From Singapore, monthly, via the island of Bawean, Sourabaya, Benjermassin (Dutch capital of the south coast of Borneo), Pulo-Lant, and Passir, to Kutei, on the Mahakker River, the principal Dutch settlement on the east coast of Borneo, and return via the same places to Singapore.

From Singapore, every four weeks, to Benjermassin direct and farther, via Pulo-Lant, Passir, Kutei, and Donggala, to Beran and Bulongan, two sultanates under Dutch suzerainty, south of the British North Borneo Company's territory.

(9) From Batavia, every four weeks, the Moluccas line via Samarang and Sourabaya, to Macassar, the capital of the Celebes Island, where a two-days stay is made. The steamers then call at Amboina and Banda (the Spice Islands) and the islands of Buru, Batjan, and Ternate. From the latter they cross again to Celebes, calling at Gorontalo, Menado, Buol, Toli-toli, Donggala, and Pare-pare, all on the north and west coasts of Celebes, and return to Macassar after a twenty-days trip. The boats remain there two days and return to Batavia via Samarang and Sourabaya. From Macassar the voyage is begun alternately in a northerly or southerly direction, one month Amboina and the next month Pare-pare being the first port called at.

From Singapore, the intermediate Moluccas line every four weeks to Sourabaya direct and via the islands of Bali, Lombok, and Sumbawa to Macassar. From Macassar, after a two-days stay, the steamers make the round trip through the Moluccas, starting alternately in a northerly or southerly direction, calling at (southerly direction) the Spice Islands—Amboina and Banda—Buru, Batjan, and Ternate; from the last-named island they cross to Gorontalo (Gulf of Tomini, Celebes) and from Gorontalo make the Sangir Islands to the northward, calling at Siao and Tarnua. They then shape a course to the southward and after calling at Menado, Kwandang, Amurang, Toli-toli, Donggala, and Pare-pare, on the north and west coasts of Celebes, Macassar is reached again after a voyage which averages twenty-two days. From Macassar the boats return to Singapore via Sumbawa, Lombok, Bali, and Sourabaya.

(10) From Macassar, every four weeks, to Bonttain, Bulecombah, Saleur, Balang nipa, Palima, and Paloppo, in the Gulf of Boni, the island of Buton, and Kendari, Tembuku, and Salabangka, on the east coast of Celebes, calling at the same ports on the homeward voyage, and also at the island of Boneratah.

(11) From Singapore, every four weeks, the Teimor line, alternately to Sourabaya direct and to Sourabaya via Batavia and Samarang. Leaving Sourabaya, the boats call at Bali, Lombok, Macassar, Bima (Sumbawa), Nangamessie (Sandalwood Island), Eudeh (Flores), Savoo, Rottie, Timor-Kupang, Timor Dilly, Atapupu (Timor), Alor Larentuka, and Maomerie (Flores); and, via Bima and Macassar, they return to Singapore, alternately direct or via Samarang and Batavia.

(12) From Singapore, once every two months, to Sourabaya, Bali, Lombok, Macassar, Amboina, Banda, and via Gisser, Lekar, and Skroe, or New Guinea, Tual, and Dobo, on the Keh and Aru (pearling) islands, Larat, Sjerra, Tapa, Wulur, Serwaru, Kisser, and Thvaki, back to Banda; thence via the same ports the boat returns to Sourabaya and Singapore.

(14) From Amboina, once every three months, a steamer of the Moluccas New Guinea line leaves for Humboldt Bay (north coast New Guinea), via Wahaay, Ternate, Gonei, Pataue, Saonek, Sorong, Samate, Doreh, Roon, Ansoes, and Djama, and returns to Amboina via the same points. The second part of the itinerary is as follows: To longitude 141° east on the south coast of New Guinea, via Gissir, Sekar, Skroe, Tual, and Dobo, returning to Amboina by the same route.

(14) From Sourabaya, every fortnight, to Banaraskan, Banjuwangei, Boleleng (Bali), Labuan Hazi, and Pedju or Lombok, and Bima, and Sumlawa or Sumbawa, returning by the same route.

Details of the distances and freight and passage rates are too lengthy for reproduction here, and as they fluctuate would be of no value for reference.

The total number of nautical miles run by the company's boats in 1893 was 219,993, and 175,474 passengers were carried.

Through transshipment agreements with the Netherlands mail lines between Java and Amsterdam and Rotterdam, as well as with foreign steamship companies, direct connections have been established between all ports of the Netherlands Indies and all ports of the Continent of Europe, Great Britain, the Mediterranean, the Atlantic seaboard of America, British India, and Australia. Quick communication is also provided by the weekly steamers from Batavia, and frequently from Sumatra, Borneo, the Moluccas, Macassar, and Sourabaya, with Manila, Bangkok, Saigon, China and Japan ports, the Sandwich Islands, San Francisco, and Vancouver, all services being via Singapore.

Commerce in the archipelago is rapidly increasing and the number of tons of merchandise carried (imports and exports) shows a considerable increase each year. The number of tourists is also greater each season, and many merchants avail themselves of the quick and comfortable steamship accommodation now afforded to take personal view of the field of their East India trade and establish new connections.

Ocean Steamship Company.—This company has direct steamers sailing every three days from Singapore for Bangkok (Siam), and others plying between Singapore and Saigon, and between Singapore, the Netherlands Indies, and the British North Borneo ports.

Apcar and Jardine lines.—Steamers of these lines from Hongkong to Melacca call at Singapore both going and coming.

Sarawak and Singapore Steamship Company.—This company's shares are owned partly by the Government of Sarawak and partly by private individuals or corporations. It has a steamer running every twelve days between Singapore and Kuching, Sarawak.

COAST AND RIVER LINES.

There are numerous vessels engaged in the coasting trade of the Malay Peninsula between Singapore and Penang, which call at the immediate ports of Malacca, the Dindings, Port Dickson, and Port

Wells, and also proceed up the different navigable streams to such points as Klang, on the river of that name, in the State of Selangor; to Telok Anson, on the Perak River, in the State of Perak, and farther when high water permits; and also to a considerable distance up the Maur River, in the territory of the Sultan of Johore. The principal line in this trade is the Straits Steamship Company, Limited, which has regular first-class mail steamers doing coastwise service and plying between these settlements and the islands adjacent.

In addition to the preceding, there are numerous other steamers engaged in the ocean, intercolonial, and coasting traffic which put in at Singapore, but it is unnecessary to mention them, for the reason that they do no regular service and are principally freight vessels.

HOW TO REACH SINGAPORE FROM THE UNITED STATES.

There are two routes by which to reach Singapore from the United States, the Pacific route and the Atlantic route. The first is by way of San Francisco, either direct or via Honolulu, to Yokohama, and thence by way of Shanghai, Hongkong, and Saigon. The second is from New York to Europe and by way of the Suez Canal and Colombo. Proceeding from our western seaboard, the former is the most expeditious; proceeding from our eastern seaboard, the latter.

ROADS AND RAILWAYS.

There is a complete system of macadamized roads throughout the colony of the Straits Settlements, and there are a number of good roads constructed and more in course of construction in the contiguous native States of the Malay Peninsula.

In the Singapore district there are 85 miles of road within and 75 miles without municipal limits. Of these the first-class roads are from 40 to 60 feet in width, the ordinary roads 30 feet, and the minor roads 20 feet.

In Malacca there are 205½ miles of first class and 123½ miles of second-class roads.

In Selangor there are of the metaled cart roads 135.37 miles; of graveled cart roads, 28.71 miles; of natural roads, 192.52 miles, and of bridle roads and paths, 57 miles; a total of 413.60 miles. The roads have an average width of 18 feet.

In Sungie Ujong and Jelebu the roads have an average width of 16 feet, and their total length is 92 miles.

In Perak there are of metaled cart roads 260 miles; of unmetaled cart roads, 114 miles, and of bridle paths, 364 miles; a total of 738 miles. The average width of these roads is 16 to 18 feet.

In the Straits Settlements proper there are no railways; those constructed or in course of construction are in the native protected States of the Malay Peninsula.

E. SPENCER PRATT,
Consul-General.

SINGAPORE, *December 26, 1894.*

MALAY STATES.

INTRODUCTORY.

In presenting this special report on the railways of the Malay Peninsula, I wish to state that, for the information contained herein, I am indebted to the courtesy of the British residents in Selangor, in Perak, and in Sungie Ujong and Jelevu, who, in response to my interrogatories, caused the government engineers and superintendents of works and surveys in their respective States to supply the data, which I could not otherwise have obtained.

There are no railways in the Straits Settlements proper. Those in the adjacent native States of the Malay Peninsula, excepting a purely local freight line of 8 miles between Bandar Maharanee, on the Maur river, and Perit Jawa, both in the Sultan of Johore's province of Iaur, are confined to Selangor, Perak, Sungie Ujong, and Jelevu. Of these full particulars are given under their respective headings.

SELANGOR RAILWAYS.

The Selangor Government Railway is a 1-meter gauge (39.37-inch) single-track line, of which there are at present 63 miles open for traffic. The original scheme, which was to connect the large tin-mining district, which Kwala Lumpur, the capital of the State, is the center, with the east, was inaugurated in September, 1886, when the line from Kuala Lumpur to Bukit Kuda, a point on the Klang River 12½ miles from its mouth, was opened for traffic by Sir Frederick Weld, governor of the Straits Settlements.

The Klang River is one of the two principal rivers flowing through the State into the Straits of Malacca, and it drains an extensive valley, the higher parts of which are rich in alluvial tin. The river throughout its course, running as it does through an extremely flat country, is very tortuous, and it was soon found that the port at Bukit Kuda, which had been established as a purely temporary measure, was, from its position and the difficulties of navigating the river in approaching it, an undesirable permanent terminus for the railway.

In 1887 the government of the State had seriously brought before it the necessity of extending the railway to a point farther down the river, which would be easier of approach than the point originally selected as a temporary terminus. After due consideration, the town of Klang, standing on the left bank of the river, 9½ miles from its mouth, was selected as a suitable and convenient site for a port and terminus for the railway. This extension of the railway was accordingly built, and was opened for traffic in August, 1890.

At the time of the selection of Klang as a terminus and port it was ascertained that the available accommodation there would be sufficient

for many years to come; but the abnormal increase in the imports and exports of the State, and consequently in the traffic carried by the railway, made it necessary to again consider the question of terminus, and it was decided early in the present year to extend the railway to the mouth of the river. Here it is proposed to construct commodious iron wharves, capable of such extension as the trade of the State may demand.

The site of the proposed harbor is on the estuary of the Klang River where it debouches into the Klang Straits; it is completely landlocked and affords excellent anchorage ground for ships of large draft. The bottom consists entirely of alluvial mud, and there are no reefs or shallows in the approach or in the harbor itself, and, owing to the estuary, there is no bar on the river. In fact, the island known as Pulan Klang, lying at the mouth of the estuary, probably formed at some remote period the river bar. At the present time, however, there are two deep-water channels, one on each side of the island, by means of which vessels may enter or leave the port at all states of the tide. It is customary for coasting vessels trading with the ports on the western shore of the peninsula to use these channels in preference to keeping out to sea.

It is proposed to construct the wharves in a position which will give a depth of water alongside varying from 13 to 17 feet at low water, ordinary spring tides. There is a rise and fall of tide of approximately 14 feet.

Before finally deciding upon the site now selected for the terminus of the railway and the construction of the wharves, the harbor and its approaches were carefully surveyed by the officers of Her Majesty's surveying ship *Egeria*, and Commander Field, R. N., reported upon the harbor as follows:

Inspection shows the port to be deep and clear of dangers, and the eastern shore of the river, southward of the police station, is well adapted for wharves, the deep water on that side extending close up to the shore throughout. * * * Reference to the chart of New Harbor, Singapore, shows that the space for getting away from the wharves varies from 200 to 400 yards, and the total length of the wharfage (east of the Peninsular and Oriental wharf) is about 2,000 yards. The port of Kuala Klang, therefore, appears to compare not unfavorably with New Harbor as regards capacity and capabilities.

From this, it may be confidently assumed that the harbor now selected will be of sufficient extent for the accommodation of the traffic of the State for some years to come. However, should the trade in the future demand greater facilities and accommodation, an extension of the railway to the Klang Straits, a distance of $3\frac{1}{2}$ miles, will command access to what has been described by competent authorities as the finest natural harbor on the western littoral of the peninsula.

From its geographical position, the State of Selangor is the natural center of the Malay Peninsula, and possessing as it does the finest and most commodious harbor, it is natural to assume that the development of the trade of the adjacent native States will be to some extent

influenced by these facts. Particularly is this the case with regard to the protected native State of Pahang, on the eastern side of the peninsula, whose principal trade route, the Pahang River, is virtually closed to trade for five months each year, owing to the difficulty and danger in crossing the bar at its mouth during the continuance of the north-east monsoon.

In addition to the railway originally built from Klang to Kuala Lumpur, a distance of $22\frac{1}{2}$ miles, and the extension to the coast which has been described above, the line has been extended from Kuala Lumpur northward for $38\frac{1}{2}$ miles through the mining centers of Rawang and Serendah to Kuala Kubu, a distributing center for the districts in the north of the State, and for the tin and gold mining country at the source of the Pahang River and its tributaries.

The township of Kuala Kubu, the present terminus of the railway, is situated 16 miles from the boundary of the State of Perak, on the north, and 21 miles from the boundary of the State of Pahang, on the east. To the south the railway is being extended from Kuala Lumpur to the township of Sungei Besi, a distance of 8 miles, the center of a large tin-mining district of the same name. From this point a route has been surveyed in a southerly direction through the mining and agricultural district of Ulu Langat, and thence in an easterly direction over the mountain range which forms the backbone of the peninsula to Temerloh, a point on the Pahang River midway between its mouth and its source. This extension, should it be constructed, would form a trunk line connecting the center of Pahang with the harbor on the west coast, already described, thereby giving that State direct communication by rail and sea with the chief center of trade at all seasons of the year. Other routes over the central range have been explored, with the view of carrying the railway into the State of Pahang, in a northerly direction, to the tin and gold mines already referred to, near the source of the Pahang River, and the majority of these have been found feasible, though they would be more costly than the route to Temerloh.

In crossing the range on any of the explored routes, the line would afford access to altitudes of 5,000 to 6,000 feet, where a temperature of about 53° F. may be enjoyed—a desideratum in a tropical country where the mean temperature in the plains is over 80° in the shade.

The railway has been built by the government of Selangor entirely out of the State revenues, with the exception of the sum of \$312,000, which was borrowed from the government of Perak and from the Colony of the Straits Settlements in 1885 for the construction of the original line. This sum has been paid off, and all the extensions of the original line have been constructed out of the revenues of the State, and, along with the line originally constructed, are earning a handsome return on the capital invested. The increase of the traffic, both in goods and passengers, carried by the railway has been, like the development of the State itself, little short of phenomenal.

The subjoined table shows the yearly increase in the traffic and the increase in the working expenses since 1890:

	1890.	1891.	1892.	1893.
Capital expended.....	\$1,062,267	\$1,100,299	\$2,092,574	\$2,679,547
Mileage open.....	22½	22½	42½	49
Gross earnings.....	\$302,813	\$310,379	\$380,452	\$527,615
Gross expenditure.....	\$126,739	\$122,926	\$149,388	\$197,839
Net revenue.....	\$176,074	\$187,453	\$231,064	\$329,776
Percentage of working expenses to gross receipts.....	41½	39½	39½	37½
Profit on capital (per cent).....	16.50	17.03	11.04	12.31
Net earnings per train mile.....	\$3.31	\$3.19	\$3.12	\$2.52
Number of passengers carried.....	125,323	134,513	182,211	261,627
Tons of goods carried.....	50,132	50,915	62,749	96,080

The line is controlled entirely by the government, and is managed and worked by a staff of English officials, with native subordinates. The track is in good order throughout, and there is frequent communication between all parts of the line. Between Klang and Kuala Lumpur there are four passenger trains each way every day, beside numerous goods trains. To the north there are two trains to Serendah daily and to Kuala Kubu one.

The passenger fares and freight charges for goods vary on different parts of the line, but generally they may be taken as follows:

Klang and Kuala Lumpur division.

Passenger fares (per mile).	Cents.	Freight rates (per ton per mile).	Cents.
First class.....	5	General merchandise.....	8-33½
Second class.....	3½	Rice.....	33
Third class.....	2	Tin ore (or metallic tin).....	12

Kuala Lumpur and Kuala Kubu division.

Passenger fares (per mile).	Cents.	Freight rates (per ton per mile).	Cents.
First class.....	5	General merchandise.....	8-25
Second class.....	3½	Rice.....	11
Third class.....	1½	Tin ore (or metallic tin).....	9½

SUNGIE UJONG RAILWAYS.

The Sungie Ujong Railway was accepted from the contractors in July, 1891, and has since been worked by a private company with headquarters in London. The company has a local agency in Singapore, and managers and staff at Port Dickson and Seremban. The interest on the capital employed, at 4 per cent, amounts to \$35,766, and under the terms of the concession the State is liable for whatever sum under this amount is earned annually by the company working the line. In July, 1892, the whole of this sum was claimed, and there was a further claim for losses, which was disallowed. In July, 1893, a payment of \$22,119 was claimed and allowed, and a further claim in connection with certain agency and other charges was disputed and is still pending.

In the estimates for 1894, the sum of \$15,000 has been set aside to meet the railway guaranty, on the supposition that the line will earn at the rate of about \$2,000 a month for the year ending with July, 1894.

The line is single track, 1 meter gauge; its length between termini, Port Dickson and Seremban, being 24 miles. There are but two intermediate stations, Kwalla Sawah and Rassak.

The total expenditure in 1893 amounted to \$66,961, and the receipts to \$84,642, giving a net surplus of \$19,681. The average monthly expenditure was \$5,580, and the average monthly receipts \$7,053.

The following comparisons between figures for 1892 and 1893 may be of interest:

	1892.		1893.	
	Month.	Amount.	Month.	Amount.
Expenditure:				
Highest	January	\$5,623.00	December ..	\$8,839.00
Lowest	April	4,397.00	April	5,190.00
Receipts:				
Highest	August	7,540.00	March	7,555.00
Lowest	April	4,882.00	April	5,567.00
Receipts per train mile:				
Highest	August .....	.72	May and November.	.65
Lowest	June .....	.03	April .....	.124
Receipts mileage:				
Highest	October	8,555	August	8,304
Lowest	May	2,530	April	2,914
Receipts carried (in piculs):				
Highest	August	18,853	December ..	20,620
Lowest	April	12,080	April	16,068
Receipts (number):				
Highest	February ..	3,741	March	3,918
Lowest	June	3,020	August	3,029
Receipts expenditure per train mile:				
Highest	January	\$2.36	March	\$2.18
Lowest	October	1.48	August	1.61

Perak and Selangor figures for 1893 are presented for comparison:

Items.	Selangor.	Perak.	Sungie Ujong.
Receipts per traffic mile	\$3.85	\$1.77	\$2.30
Expenditures per traffic mile	2.57	1.87	1.83
Receipts per traffic mile	2.57	.40	.47
Working expenses to gross receipts	33	76	76

Passenger traffic on the Sungie Ujong Railway remains almost the same, but the goods traffic is steadily increasing.

The permanent way is now in a better condition than when the road was handed over to the contractors, and requires little expenditure to maintain it in order.

For the year 1892, it is stated that the average yearly expenditure on the Linggi Railway up to 1890 was nearly \$17,000, whereas in 1892, the expenditure has been only \$3,000, and I doubt if the railway has handled a traffic of 200,000 piculs (13,334 tons) with a larger expenditure than \$17,000. The Jelebu road now costs about \$25,000 a year.

The freights charged by the company are, except for certain articles, the highest allowed under the terms of the concession. They are less for most things than would have been charged for cartage, but this is counterbalanced in the eyes of local traders by the distance that goods have to be carried to and from the station at Seremban and the delays that occasionally occur in delivering goods from the railway goods sheds. I doubt whether any proposed extension of the line toward Jelebu could compete with cart traffic unless stringent measures to destroy the cart traffic were adopted, as was done on the Linggi Railway. It costs about 30 cents to bring a picul (133½ pounds) of tin from Jelebu to Seremban, and I do not think a railway could do it cheaper.

PERAK RAILWAYS.

The government of Perak controls the railways in the State. The termini and main points touched are Port Weld, Taiping, Kamunting, and Ulu Sapetang, on the Larut line, and Ipoh, Lakat, Batu Gajah, Kota Bharu, Kampar, Tapah, and Teluk Anson, on the Kinta Valley line.

The Larut line is 17½ miles in length, the distance from Port Weld to Taiping being 8½ miles. The Kinta Valley line is 51½ miles long, the distance from Teluk Anson to Kampar being 27 miles, and from Teluk Anson to Ipoh 50 miles. The above are all open for traffic, except about 11 miles now under construction. These lines are single track.

The train service is regular and sufficient for the accommodation of the business.

Passenger fares and freight rates.

Passenger fares (per mile).	Cents.	Freight rates per picul (133.33 pounds) per mile.	Cents.
First class	First-class goods	0.75
Second class	Second-class goods .....	.50
Third class	Third-class goods .....	.25

First-class goods comprise groceries, liquor in bottles, glassware, textile fabrics, etc.; second-class goods, coffee, grain, rice, liquids in casks, tobacco, sugar, etc.; and third-class goods, coal, coke, building materials, etc.

Detailed surveys have been made for an extension of the Larut line from Taiping to Kwalla Kangsa, a distance of about 20 miles, and a preliminary survey has been made for a branch from Ipoh to Kwalla Kangsa to connect the Kinta Valley line with the Larut line. A preliminary survey has also been made from Ulu Sapetang to Selama, in Larut, with a view to future extension in the direction of Prai, in the province of Wellesley, opposite Georgetown, in Penang.

DUTCH INDIA.

JAVA.

OCEAN LINES.

The ocean and coast lines supplying service to the port of this island are controlled by companies which receive subsidies from the Governments under whose flag they operate. The main lines are:

Stoomvaart Maatschappij Nederland (Netherlands Steamship Company).—This company furnishes a fortnightly mail and passenger service between Java and Amsterdam.

Stoomvaart Maatschappij Rotterdamsch Lloyds (Rotterdam Lloyds Steamship Company).—A fortnightly mail and passenger line is operated by this company between Java and Rotterdam.

Queensland Royal Mail Line.—This company has a monthly passenger service between Java and London, and also carries the mails between Java and Queensland (Australia) ports.

Peninsular and Oriental Royal Mail Line.—This company includes among its numerous services a fortnightly mail and passenger line between Java and Europe, via Singapore.

Messageries Maritimes Line.—A fortnightly mail and passenger service is operated by this company between Marseilles and Batavia, via Singapore.

ROUTES.

The Netherlands Company's steamers run between Batavia and Amsterdam, via Genoa, calling at Padang, Aden, Suez, and Port Said.

The Rotterdam Lloyds vessels run between Batavia and Rotterdam, via Marseilles, calling at Colombo, Pirim, Suez, and Port Said.

The Queensland Royal Mail Line steamers run between Batavia and London, calling at Colombo, Aden, Suez, Port Said, and Naples.

The Peninsular and Oriental Royal Mail Line carries the mails between Batavia and London, via Brindisi, calling at Singapore (connecting with the home boat), Colombo, Aden, Suez, and Port Said.

The Messageries Maritimes boats run between Batavia and Marseilles, calling at Singapore (connecting with the home boat), Point de Galle, Aden, Suez, and Port Said.

The following table shows the lengths of the various routes and distances from Batavia to principal ports of call:

Name of company and port.	Miles.	Name of company and port.	Miles.
<i>Netherlands Company.</i>		<i>Batavia to—</i>	
Batavia to—		Pirim	4, 500
Amsterdam	9, 100	Marseilles	7, 100
Colombo	2, 000	Marseilles to Rotterdam	1, 900
Aden	4, 000	<i>Queensland Royal Mail Line.</i>	
Genoa	6, 700	<i>Batavia to—</i>	
Genoa to Amsterdam	2, 400	London	8, 718
<i>Rotterdam Lloyds.</i>		Colombo	2, 000
Batavia to—		Aden	4, 000
Rotterdam	9, 000	Naples	6, 644
Colombo	2, 000	Naples to London	2, 272

The Peninsular and Oriental and Messageries Maritimes companies have each a steamer in a special service between Batavia and Singapore. The distance from Batavia to Singapore is about 600 miles.

CONDITION AND EQUIPMENT.

The Netherlands Company and Rotterdam Lloyds are long-established lines, and their vessels and service are good in all respects. They have now a fleet of fine ships and are adding new steamers every year. Their average time of passage is twenty-eight days. Both companies are in good financial condition and have been paying yearly dividends of 6 per cent.

The Queensland Royal Mail Line is an English company, the steamers being owned by the British India Steamship Company. It has been long established and is in first-class condition. This line has the largest and finest vessels calling at Batavia, and they generally make the passage from London in thirty days. Having an agreement with the other mail lines, these steamers do not bring mail to Batavia from Europe, and only take mails from London to Queensland and from Batavia to Queensland, returning with mails from Queensland to Batavia and London.

The Peninsular and Oriental Royal Mail and Messageries lines are well known in all ports in this division of the world, and, without exception, are the two best mail services in the East. They have only branch steamers running between Batavia and Singapore. These two companies have landed European mails in Batavia in twenty-six days, but the usual time is twenty-eight days.

The Netherlands Company has ten steamers, averaging 3,000 tons (gross) and 500 horsepower each.

The Rotterdam Lloyds has twelve steamers, averaging 2,000 tons (gross) and 400 horsepower each.

The Queensland Royal Mail Line has ten steamers, averaging 4,000 tons (gross) and 600 horsepower each.

The Peninsular and Oriental and Messageries Maritimes companies have each one steamer running between Batavia and Singapore of about 800 tons (gross) and 120 horsepower.

All the steamers of these lines are fitted with the latest improvements, including electric lights and hydraulic power.

PASSENGER AND FREIGHT RATES.

By the Netherlands Company and the Rotterdam Lloyds, the through first-class passenger rates to either Amsterdam or Rotterdam is \$301.50.

By the Queensland Royal Mail Line, the through rate, first class, is \$201.

By the Peninsular and Oriental and Messageries Maritimes lines, the through rate, first class, is \$281.40.

The Netherlands Company, Rotterdam Lloyds, and Queensland Royal Mail lines are combined and have a regular tariff for freight. The rates for dead weight are 61s. 6d. (\$15) per 12 hundredweight (1,344 pounds) through to London and other European ports, and for measurement goods 27s. (\$6.56) per 40 cubic feet. These lines also take cargo through to New York and Boston at the following rates: Dead weight—Boston, 82s. 6d. (\$20.06); New York, 70s. (\$17.03) per 12 hundredweight. For measurement goods—Boston, 36s. 6d. (\$8.89); New York, 27s. (\$6.56) per 40 cubic feet. These are the only mail lines taking through freights to European and United States ports.

COAST LINES.

The Koninklijke Paketvaart Maatschappij (Royal Packet Company) is the only company operating a coast service for mails and passengers. It is under the control of a Holland corporation, and is allowed a subsidy from that Government.

Batavia is the principal starting point and terminus of these steamers. They run east to the islands of Ceram and Ternate, of the Moluccas, calling at all the principal Java ports—Cheribon, Samarang, and Sourabaya. They also run to Borneo and Celebes. To the west they run to Poloe Bras (Acheen), calling at all Sumatra ports—Palembang, Telok Betong, Benkoelen, and Padang. Steamers leave Batavia every five days for Javan ports and every week for the Moluccas, Borneo, Celebes, and Acheen. There are also a number of extra steamers run by this line to different Javan ports when required.

The total route of these steamers is about 2,150 miles, viz, Batavia to the Moluccas, 1,450; Batavia to Achen, 700.

The distances between the principal Javan ports are as follows:

From—	To—	Miles.	From—	To—	Miles.
Batavia	Cheribon	120	Batavia	Telok Betong	90
Cheribon	Samarang	110	Telok Betong	Benkoelen	200
Samarang	Sourabaya	130	Benkoelen	Padang	180

The company has been in existence since January, 1890, and is, in every respect, in first-class condition. For the year 1893 it paid a dividend of 9 per cent. The steamers are nearly all new, having been built within the last five years, and others are added yearly. They are fitted with all the latest improvements and lighted by electricity.

There are thirty steamers belonging to the company, averaging from 500 to 1,500 tons register, with horsepower ranging from 160 for the larger boats to 90 for the smaller ones.

Steamers for Javan ports leave Batavia and Sourabaya every five days; for Celebes and the Moluccas every week, and for Acheen and other Sumatra ports weekly. There are extra steamers to Javan ports and Celebes when the regular service is found insufficient for the traffic.

The first-class passenger rates by this company for short distances are 8 cents per mile, and for long distances about 6 cents per mile.

The freight rates for dead weight between termini is about \$2.80 per ton, and for measurement goods \$5 per ton of 40 cubic feet; from Batavia to Samarang the rate for dead weight is about \$1 per ton, and for measurement goods about \$2 per ton of 40 cubic feet, and from Batavia to Sourabaya, for dead weight, about \$2 per ton, and for measurement goods about \$3.50 per ton of 40 cubic feet.

RAILWAYS.

STATE RAILWAYS.

Eastern lines.—According to official returns for 1893, the main lines of the State railways run (1) from Kalimas to Solon, via Sidhoardjo, Moajokerto, Kertosono, Madsen, and Parm (167.5 miles), and (2) from Kertosono, via Kediri and Toeloeng Agoeng, to Blitar (57.5 miles). A branch line runs from Sidhoardjo, via Banzil and Pasaeroean, to Probolingo (47 miles), and another branch from Banzil to Malang (30.6 miles), making a total mileage of 302.4.

The branch from Banzil to Malang is being extended to Blitar, via Kependjin and Whingi, and the branch from Sidhoardjo to Probolingo is being extended to Lotobondo, via Randoeagaeng, Djemboe, Kalisaat, and Bondowono, with a side branch, Randoeagaeng to Pasirian.

These line are single track and the width of track is uniformly 3 feet 5 inches.

The gross earnings for the financial year were \$1,829,427, and the working expenses \$810,648, making the net earnings \$1,018,779. The total capital invested to December 31, 1893, was \$15,083,414.

Passenger fares are 2.2 cents, 1.6 cents, and 6 mills per kilometer (0.6214 mile) for first, second, and third class, respectively. Freight rates are \$1.89 per ton.

The only obstacles which had to be overcome in the construction of these roads were the bridging of the Solo and Brantas rivers, both of which are crossed by bridges of the Schwedler type. The piers of the bridge over the Solo are of masonry, and the rails are 67 feet above the lowest point of the foundations. The foundations of the piers of the Brantas bridge are of masonry, concrete, and piles, and the rails are 62 feet above the piles.

Western lines.—The western division of the State railway system is made up of two main lines and branches, the mileage of which is as follows: (1) Batavia to Tondjong Cricok, 5½ miles, from which place to Buelenzorg, 34 miles, a private line is used. From Buelenzorg the State system continues, via Sackaboemi, Tjiondjoer, Bandoeng, Tjitjalengkar, Tjibatoe (connecting with a branch to Garact, 12 miles), and Malamong to Tasik Malaijo, 167.8 miles; (2) Djokjakarta, via Wates, Koetoarjo (connecting with a branch to Paeroworedjo, 7½ miles), and Maos, to Tjilatgap, 109 miles.

The gross earnings and expenses of the western lines and branches in 1893 were:

Line.	Earnings.	Expenses.	Net earnings.
No. 1	\$541,342	\$359,794	\$181,544
No. 2	336,824	219,714	117,110
Total.....	878,166	579,508	298,654

The capital invested to December 31, 1893, in these lines was: Division No. 1, \$9,128,863; division No. 2, \$5,791,874.

The chief engineering features of these lines are: Tjitaroem viaduct, a continuous-girder lattice bridge, loaded on the upper side, rails 196 feet above the bed of the river; Tjisaät viaduct, of same type as that over the Tjitaroem, rails 189 feet above the bed of the river; Tjiherang viaduct, built on iron pillars on a curve of 150 meters radius, rails 115 feet above bed of the river; Tjitandoei viaduct, combined highway and railway bridge, two girders, tubular type, rails 209 feet above the foundation.

PRIVATE RAILWAYS.

Netherlands India Railway.—From Batavia to Tandjong Priok, and forms the connecting link for the State system between Batavia and Buitenzorg, 34 miles.

Batavia Eastern Railway.—From Batavia, via Mount Corneles and Bekasi, to Krawang, 35 miles.

Samarang-Werstenlanden Railway.—From Samarang, via Kedoeng Djati, Joendik, and Solo, to Djocjocarta, 103 miles, with a branch line from Kedoeng Djati to William I, 24 miles.

When the State line, in course of construction, is finished, it will give direct State railway communication from Panarockan and Sotobondo, on the eastern end of the island, to Batavia, on the western end, via Tjilatjap, on the Indian Ocean, with the exception of the two gaps, connected by private lines, from Solo to Djocjocarta (103 miles), and from Buitenzorg to Batavia, 34 miles.

The following table is prepared from official statements, and shows the gross earnings, expenses, and net earnings of the different companies during 1893, and also the total amount of capital invested to December 31, 1893:

Lines.	Earnings.	Expenses.	Net earnings.
Netherlands India Railway Company	\$301,252	\$144,699	\$156,553
Samarang-Werstenlanden Railway Company	982,340	380,710	601,630
Batavia Eastern Railway Company	115,395	53,724	61,671
Java Railway Company	27,320	20,883	6,437
Total.....	1,426,307	600,016	826,291

These lines are single track. The Samarang-Werstenlanden road is 4.68 feet gauge and the others 4.17 feet gauge.

The following are the passenger and freight rates on the four lines per kilometer (0.6214 mile):

Lines.	Passenger rates.				Freight rates per ton.
	First class.	Second class.	Third class.	Fourth class.	
	<i>Cents.</i>	<i>Cents.</i>	<i>Cent.</i>	<i>Cent.</i>	<i>Cent.</i>
Netherlands India Railway Company.....	2.6	1.5	0.6	0.4	0.632
Samarang-Werstenlanden Railway Company.....	2.4	1.5	.8	.4	.625
Batavia Eastern Railway Company.....	2.0	1.2	.7		.525
Java Railway Company.....	2.4		.8		.636

B. S. RAIDEN,

Consul.

BATAVIA, *January 1, 1894.*

SUMATRA.

RAILWAYS.

State railways.—The State system comprises a line from Poelaëajer to Sawah Loento, via Padang, Kajoetanam, Padang-Pandjang, and Batotabal to Solok, 94 miles, with branch lines from Padang to Emma Harbor (4.4 miles), and from Padang-Pandjang to Fort de Kock (12 miles), making a total mileage of 110.4.

Private lines.—The Delhi Railway Company operates a line from Balawan to Delhitrewah, via Laboean and Medan (21 miles), in connection with which are branches from Medan, via Serdang, to Perboeang (23 miles), and from Medan, via Tombang Lankat, to Selesfeh (19.5 miles); total mileage, 63.5.

The following figures will show the earnings and expenses, as officially stated, for the financial year 1893, and also the total capital invested to December 31, 1893:

Lines.	Earnings.	Expenses.	Net earnings.	Capital invested.
State railways.....	\$300,664	\$172,234	\$128,430	\$7,262,795
Delhi Railway Company.....	369,881	177,647	192,234	2,762,327
Total.....	670,545	349,881	320,664	10,025,122

The following are the passenger and freight rates on the State and private railways per kilometer (0.6214 mile):

Lines.	Passenger rates.			Freight rate per ton.
	First class.	Second class.	Third class.	
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
State railways.....	3.7	2	1.3	1.7½
Private railways.....	5.8	3.3	2.1	.8

B. S. RAIDEN,

Consul.

BATAVIA (JAVA), *January 1, 1894.*

CHINA. SHANGHAI.

INTERNAL COMMUNICATIONS.

Of the artificial means devised in the interest of the internal communications of China, the Grand Canal takes precedence. The conception and construction of this waterway evidence great mental breadth and skill, but as a work of technical excellence, it does not compare with the canals of western countries. At the time of its construction, however, there was no other similar waterway in the world equal to it, and there is no work of the kind now in Asia comparable with it. The entire length of the canal is about 650 miles, or not quite twice that of the Erie Canal, and its utility is inestimable. The Great Wall of China is but a useless monument of industry, while the Grand Canal bears daily attestation to the prudent foresight of the Emperors who have given it their fostering care. The one stands in solemn stillness where it stood centuries ago; the other ever moves, freighting from province to province the rich productions of the Empire. The wall was built to beat back the Tartar, but the Tartar now sits upon the throne of China, while the canal, constructed in the interests of peace, continues to perform its office, and keeps fresh on the page of history the name of its projector. Marco Polo says the Grand Canal was designed by Kublai, and describes it thus: "You must understand that the Emperor has caused a water communication from this city (Kua-chan) to Cambaluc, in the shape of a wide and deep channel dug between stream and stream, between lake and lake, forming, as it were, a great river on which large vessels can ply." But the most accurate authority on Chinese history (Williams's Middle Kingdom) maintains that this useful work existed before the day of Kublai, and states that it was repaired by the founder of the Lin dynasty, A. D. 600.

As the character of the internal traffic of a nation indicates its civilization, a close observer writes that while there is much to be admired in China, the good in almost every case is marred by some defacing or neutralizing quality. "Just as the outward appearance of their furniture is spoiled by the exquisite discomfort of their chairs and divans, and their stately ceremonies by dirt and squalor, so their means of travel, which in some ways are luxurious, are discredited by the discomforts of the carts, the mud and ruts of the roads, and the miserable condition of the inns."

But although the rivers and roads of China are impossible for quick locomotion, the real commerce of China is the internal commerce, which is developed on an enormous scale. The Empire is a vast network of rivers and canals, and these are the main channels of intercommunication between the provinces. As early as 1656, Father Magilliam writes

that he navigated the Grand Canal and other rivers for more than 1,500 miles without going by land more than one day's journey.

But, unfortunately, the principal channels for the internal commerce of China do not appear to have been touched by the hand of modern improvement. The large vessels which Marco Polo saw on the Grand Canal have given place to small junks, and even these navigate it with much difficulty. The Yellow River remains a menace to the rich meadows through which it flows and to the lives of the thousands of inhabitants who live on its banks. Impediments to navigation and obstructions which change the course of rivers remain untouched as the years go on.

The famed highways which excited the admiration of the early European travelers are now in an almost impassable state. Their condition is such that passage over them is virtually stopped, as the holes and ruts that deface them force travelers to desert them for the tracks by the sides, although these in wet weather are but quagmires, and in dry weather several inches deep in dust.

The roads in general use, correctly described as merely the customary roads from village to village, are never macadamized, and follow all the natural irregularities of the surface. They are undrained, and in low sections are zigzag in their courses, carriers being compelled to vary their routes to escape the pools of water or the pitfalls and other obstructions. Even such roads are often the subject of contention for occupancy between the farmers and the carriers, and the contention is encouraged by the fact that the farmer has the right to plow up the road running through his land, and the carrier has the right to drive over any part of the land. These opposing rights end in compromises by which certain defined courses and limits are marked out for the roads. In the provinces devoted more exclusively to the cultivation of rice the roads are more permanent in course and limit. Here granite stones are often laid in the center of the main road, but only wide enough for the ordinary handbarrow, with its wheel in the center. In hilly districts the roads generally follow the water courses, but receive little attention and are frequently impassable. To describe the condition of one road in China is, substantially, to describe all; and they are uniformly bad.

Public opinion in China has opposed the building of railroads in the Empire. Whenever such works have been in contemplation this hostile opinion energetically shows itself, and the solid wall of resistance has never been overcome.

In 1876 British merchants at Shanghai built a railroad from the city to the mouth of the Woo Sung River, a distance of about 15 miles, but in 1877 the provincial authorities acquired compulsory possession, tore up the road, and paid for it. The city of Shanghai is situated on the Woo Sung River, and there is a bar at the entrance of the river which prevents ships of large tonnage from approaching nearer the city.

The road was necessary to facilitate quicker communication and the handling and delivery of freight; but the all-prevailing prejudice of the Chinese to progress defeated the realization of any practical benefits from the enterprise. The commercial interests of Shanghai render such a road necessary.

The railroads undertaken, and in part completed, in another section of China have escaped the fate of the road that connected the commercial metropolis with the sea. On British-built carriages, upon British steel rails, one can travel from Tongku, near the Taku forts at the mouth of the Peiho River, over the 27 miles to Tientsin; while from Tongku the main line is prolonged for 67 miles to the Tungshan and Kaiping coal fields, and thence as far as Shan-hai kwan, the seaward terminus of the Great Wall, in the direction of Manchuria.

Although the conservatism of China has so steadfastly resisted all attempts at internal improvement, there is a sentiment in the Empire which recognizes the necessity for keeping step with progress. The alarm produced by the French war in 1884 greatly encouraged the progressive statesmen of China, and it was due to the influence of one of the foremost of her great statesmen, Li Hung Chang, that the tracks of the road described were laid. The Trans-Siberian Railway of Russia to Vladivostok has awakened new interest and proved an additional encouragement to the efforts for the advance of railroad building in China. But the reason why China should develop her immense resources on modern lines has at last unanswerably forced itself upon those who would neither see nor hear. The war with Japan, in which a nation of less than one-fifth her size has dictated terms of peace, as it were, at the gates of China, can not fail to make a lasting impression. China must understand that her present reverses might have been averted had she, like her neighbor, imbibed the spirit of progress. The reserve forces of the Chinese in numbers and wealth, aided by the concentrating power of the railroad, would have been as irresistible to an invading foe as were their ancestors when victoriously sweeping over these plains under the standard of Kublai.

A few years ago, the Empress Dowager of China, one of the great women of the world, addressed interrogatories to the principal provincial governors and governors-general, inviting their counsel on the subject of railway extension in the Empire. The replies thus elicited indicated an affirmative change of sentiment, and one of them deserves to be quoted, in part, word for word:

We shall thereby be able to send troops, money, etc., anywhere within our Empire within ten days; and, moreover, we shall be able to found prosperous colonies in those outlying regions of people who in China proper are only a starving proletariat, and a source of trouble to the Government, but who, once transplanted thither, will be able to find a fruitful field for their now unemployed labor, and will turn the desert into a garden.

The quotation shows that the author of the reply from which it is taken comprehended the needs of his country. It evinces a knowledge

of the use of railroads as a means of national defense and for the relief of human wants. The area of China is as large as the area of the United States, and the different climatic influences prevailing some times prove disastrous to the crops of one section while an abundant harvest is gathered in another, and there being no quick facilities for transportation the pitiless ravages of famine go unchecked. In nearly every annual report there is a page devoted to telling of the absolute necessities of certain provinces of China and the sufferings of the inhabitants because of the absence of means for expediting relief. From a military standpoint, the want of railroads has rendered useless the superior numbers which China could otherwise concentrate against any invader; and passing events must teach the most conservative statesman that China will have to inaugurate a policy looking to the development of the Empire, or the Empire may be dismembered or fall to pieces of its own helplessness.

The belief is entertained that, whatever may be the tendency of the results of the war between China and Japan, the former will abandon her policy of opposition to improvements and move forward on modern lines of development. The operators whose perseverance and skill have interlaced the United States with the best equipped railroads of the world may soon find an inviting field on Asiatic soil. China will want new war ships, railroads, army and naval stores and equipments, and will probably not be averse to enlisting skill which no enterprise has ever baffled. These general observations in connection with the internal means of communication in China may be appropriately supplemented by information on the subject of a more particular character.

On the 1st of October, 1890, the council of the China branch of the Royal Asiatic Society distributed widely through China a circular requesting information as to the routes and means of carriage existing in the various parts of China and the facilities for the transportation of passengers and merchandise. Answers to the circulars have been received from fourteen out of the eighteen provinces into which China has been divided, and have been published in book form; and the subject is so concisely and intelligently presented in the notes which preface the publication that I give them in full:

Probably no country in the world, certainly none aiming at civilization even of the most rudimentary nature, has paid so little attention to roads and means of communication as has the Chinese Empire; and it may be remarked at the outset that no road in the European acceptance of the term, as an artificially constructed viaduct, laid out with engineering skill even of the crudest description, exists from one end of China to the other. Three partial exceptions may be noted, the road from Tung-chow to Peking, the road from Han-chung to Chong-tu, and that formerly existing between Nanking and Fung-Yang, all described below. Otherwise the roads as they exist are merely the customary tracks from one town or village to another, are never macadamized, and follow all the natural irregularities of the surface. They are never bounded by fences, are generally undrained, and when proceeding through level plains are entirely undefined and wander about from side to side as puddles of water or artificial pitfalls dug by the neighboring farmer compel the drivers of vehicles to vary their route.

Every spring, in the southern provinces at least, a struggle for occupation takes place between the carters and farmers. The farmer has, on the one hand, a perfect right to plow up any road passing through his land, and, as a matter of fact, generally exercises this right; on the other, the teamster has an equal right to drive his wagons over the country at large, and equally, as a matter of fact, exercises it. To prevent the ruin of his own crops, and to force, if possible, the track upon his neighbors, the farmer then begins to dig pitfalls along the most frequented route, compelling the teamster to move to one side. As it is evident that he can not continue these greatly without inflicting more damage than he is likely to suffer from the passage of the carts, a compromise is gradually arrived at, and the tracks from year to year follow approximately the same lines. In the loess-covered provinces the circumstances of the case compel a different system. Owing to the numbers of ravines crossing the country in all directions, the limits of deviation are narrower than in the plains of Shantung and Chili; the constant passage of the carts keeps the surface continually stirred up, and the wind catches the fine particles of sand, of which the loess is mainly composed, and carries them over the adjacent country. In consequence, the tracks have a continual tendency to sink below the surface, and are often found occupying narrow passages sunk 30 or even 50 feet under the general level. In the eastern provinces, from like causes, the roads, when passing through villages or approaching a bridge, are almost invariably sunk below the surface, and the bridge in such cases becomes impassable for wheeled traffic, its abutments being raised many feet above the road level. In the Yangtse delta, and the southern provinces generally, the use of carts and wagons has long been superseded, and the only wheeled vehicle is the handbarrow with the wheel caged in the center. To accommodate this, the centers of main roads are generally paved to a width of 1 or 2 feet with rough granite flagstones. The roads in this case are, of course, permanent, as is, indeed, necessary where rice is extensively grown. They are not, however, laid out on any system, merely following the lines of divisions of the fields. In hilly districts the roads generally follow the lines of the water courses, and are impassable in floods. The bowlders are seldom or never removed, and carts passing avoid them or surmount them as best they can, their motion most resembling that of a ship in distress as they sway about in dangerous proximity to the angle of final stability. Frequently this is exceeded and the cart is overturned. The latter incident is not, however, confined to mountain tracks, the ruts in the roads across the plains being frequently as bad. The writer has, indeed, known a cart to capsize in one of the main streets in Peking and two of its occupants to be suffocated in the filthy mud before assistance could arrive.

That this state of neglect is not of recent origin may be judged from many incidents. The high road from Peking to Shantung and Kiangnan crosses the old bed of the Yellow River at Ping-yuan Hyien, in Shantung. This bed has been entirely deserted since the twelfth century; its bottom is raised a few feet above the level of the plain and is bounded by two raised embankments some 30 feet high. The removal of a few thousand cubic feet of soil would have enabled the road to be leveled the whole way across and a good road made. Instead of this, the entire traffic climbs diagonally up one side of the outer embankment, descends to the bed of the river, and repeats the process on reaching the other embankment. The whole expense of making a good road would not exceed 2,000 taels. And this is one of the most important routes in the Empire.

The emperors of the Yuan dynasty are credited with greater care for the internal communications of the Empire than their successors, and the road referred to above, from Peking to Tung-chow, remains as a vast effort of intility. It is paved with magnificent blocks of granite, closely jointed. It is now worn into ruts, often exceeding a foot in depth, and is almost impassable. A second effort in road building was made by Hung-wu, first emperor of the Mings (1368-1399 A. D.), who made a roadway from Pukee, on the north bank of the Yangtse, opposite Nanking, his capital, to Fung-Yang, in Anhwei, his birthplace. This road is remarkable as an

early piece of engineering, the levels being carefully graded and the road carried across the river valleys which intersect on well-built arched viaducts, one of ten well-built stone arches. The city of Chu-chow, through which the road passes, owes to the same monarch some beautifully designed stone bridges, with segmental arches, a rare, if not unique, form in China. Even here the builder had not thoroughly grasped the idea of an arch, the bridge being composed of a series of parallel stone ribs, each alternate stone being a long stretcher. Beyond these roads no feats of engineering skill have been attempted in connection with the land communications of China, for the celebrated stone bridges of Fukien and elsewhere, though remarkable as showing the ability of the Chinese to move huge masses of stone by manual labor, as feats of engineering are not worthy of extended notice.

The viaducts on Hung-wu's road have long since fallen into disuse, in this, indeed, recalling the usual practice of the Chinese, whose buildings, from the day that they are completed till their final collapse, seldom undergo repair of any kind. More especially is this the case with the roads, for the keeping in order of which no regular funds are available; nor is any provision made for their superintendence. The repairing of roads is, according to Buddhist ideas, a work of merit, but is so rarely exercised, however, that whenever a repair is effected the donor takes care to have it recorded by a stone tablet the erection of which not infrequently costs more than the entire reparation.

In the central and seaboard provinces, as a rule, no governmental provision is made for the making or repairing of roads, and the burden is thrown on private parties. Any little work is effected by means of private clubs, which collect subscriptions and supervise what is done. Sometimes, but very rarely, when things have come to the point that traffic is actually impossible, the officials will step in and levy taxes for the purpose; but the people have so well grounded a suspicion of the object as well as the honesty of these officials that such levies are often resisted and are always unpopular.

In the western provinces, where roads have frequently to be maintained for long distances through thinly populated districts, the officials have to make provision for their repair. The soldiers are generally utilized for the purpose, but occasionally the labor is raised by *corvée* from adjoining villages.

What applies to roads generally applies more or less directly to bridges, but with the reservation that the maintenance of the bridges is always recognized as an official duty. Bridges are seldom repaired, and unless newly erected are for the most part utterly neglected. They are never built on scientific principles. Where good granite or flagstones are obtainable they generally consist of lintels thrown across stone piers, and these simple structures are usually in the best condition. When one of the lintels breaks or becomes displaced, it is not repaired, but the breach is filled with the trunks of trees, or in the north with millet stones, covered with earth and small paving stones. It is not until the road becomes absolutely impassable that repairs are taken in hand, and by the time they are commenced the edifice has become so dilapidated that entire rebuilding is necessary.

When suitable, the bridges assume an arched form. The arch, however, has never been thoroughly naturalized in China. Lines of *voussoirs* are laid at distances of from 5 to 9 feet, and the spaces between are occupied by thrust blocks of stone joggled at both ends. As the face of the stone is cut to the intrados of the arch, an element of weakness is always introduced, and as counter arches in the haunches are never made use of, the arch in a few years begins to rise in the shoulders. The road pavement, always of stone, in such a case of course becomes displaced, but that is a matter of little moment to a Chinaman, who has all his life been accustomed to disorder. Over deep and rapid rivers bridges of boats are common, and in some places, where the severity of the winter requires it, provision is made for their annual renewal. Over the gorges of the Kinsh-Kiang and the other rivers between Szechwan and Thibet, and in Shensi, between Sian and Chang-tu, rough suspension bridges

are used. These consist of iron chains, slung from bank to bank, and planked over with wood. As no provision is made for staying or side rails, these are eminently dangerous except in mild weather, and even then can only be crossed by one mule at a time.

Though the Government has taken little or no interest in the condition of roads in the Empire, it has always concerned itself with regard to rivers and canals. It is true also that the knowledge displayed has been of the crudest order, and that, taking the Empire as a whole, its concern has been of little result for good.

Dismissing as myths of the most transparent nature the stories of the Deluge of Yaou and the final triumph of Yu over the surging waters, we find that the first efforts of man to control the waterways of China extend far into prehistoric ages. Long before the birth of tradition even, we find immigrant tribes settling along the course of the Yangtse, which they had apparently descended from the regions west of Szechwan. The wide regions of what is now the Hu-kwang, the ancient name of which was probably Kshar, and survives in the present King and Chu, were tenanted by a people who, under a strong government, seemed likely at one time to become paramount in the north of China. Even now the Hu-kwang is a region of lakes, rivers, and canals; but in those days the expanse of the water gradually filled up by the annual overflows of the great Kiang and its tributary, the Han, must have been both greater and deeper than at present. These people, from the necessities of their daily existence, early learned the art of throwing up dikes and restraining by embankments the flooding water.

Lower down, and occupying the delta lands of Kiangnan, and extending as far as the mouths of Che-kiang, then tenanted by the people of Yuen, was the Kingdom of Wu, which rose for a short time into prominence among the states of the Chun-tsiu. Through this region flowed the three ancient arms of the Yangtse known as the San-kiang, and within its bounds were the ancient Five Lakes of antiquity, including the great Chen-tesh itself. The people became adepts in the art of controlling their waterways, so that at the present day so modified by artificial works are the courses that it is a difficult thing to restore the ancient drainage lines. To them is probably to be attributed the series of works, still existing, by which the arm of the Yangtse entering the Tai-hu was directed northward. The Sungkiang, which led its waters to the sea, has gradually dwindled to the modern Soochow Creek, and the Hwangpu, dug out as an artificial canal, now takes the drainage of the lower province. The Hai-tang, which prevents the waters of the upper part of Hanchow Bay, now the estuary of the Tsien-tang, from mingling with the fresh waters of the lakes and canals, apparently had its commencement at a time anterior to history, while yet the Tsien-tang, as the Che, entered the sea not far from the ancient city of Yu-yao. The long line of embankments north of the Yangtse, reaching from Yangchoo to Hwai-an Fu, must have been commenced anterior to the time of Chun-tsiu. At this period, doubtless, was constructed the canal from the Hungtse to the Kao-yao Lake, which has so greatly modified the aspect of the northern Kiang-su. The Hwai, which in early days flowed past Hwai-an Fu to the sea, by degrees became diverted along the line of the new canal, and now, through another artificial channel, the Mang-tung, the Ho makes its way by Tai-chow and eventually mingles its waters with the Yangtse.

Tradition tells of the Yellow River escaping through the Nino Ho into the Gulf of Pechili; but by degrees it was embanked and confined to a single channel, before referred to, passing by Ping-yuan Hien, in Shantung. During the Yuan dynasty the Yellow River deserted this course and for a long time flowed in a channel toward Hwai-an Fu, a portion of which was subsequently utilized for the construction of a canal connecting the Tsi, now the Tsing Ho, and the Hwai. Subsequently, guided apparently by the lines of the abandoned outlets of the ancient Yellow River, a connection was made with the Wei, and the Yun-liang, the "Grain-Bearing River," once famous in Europe as the Imperial Canal of China, was completed.

Whether at any time this canal served any more useful purpose than conveying yearly the fleets of junks bearing the imperial tribute from Hwai-an Fu to Tung-chow is doubtful. Of late years it has been a mere ditch, flooded to let the grain junks pass, and immediately closed again, as its defective construction and the mud-laden waters of the Hwang-Ho, with which the northern portion is annually flooded, render its reexcavation every year a necessity. As a means of communication between the northern and southern provinces the canal need not be considered, as not a single vessel except the junks carrying the tribute rice ever passes, the carriage of the rice itself by this route being a fiscal measure benefiting only the official engaged in it, while seriously crippling the revenues of the Empire.

Wherever, then, the Chinese have found a navigable river, they have, by a sort of instinct, endeavored to utilize it; and this habit, older than the system of government itself and sanctified by the earliest tradition, has become a part of the administration. Like everything else of which the Government of China takes cognizance, it is to the last degree ineffective; and it is an open question whether more good or evil has been done by these efforts to control the natural courses of the waterways.

T. R. JERNIGAN,
Consul-General.

SHANGHAI, *April 19, 1895.*

TIENTSIN.

OCEAN TRAFFIC.

Tientsin is peculiarly situated as regards commerce. It is not the terminus of any ocean lines coming directly either from America or from Europe, and it is closed to navigation during the months of December, January, and February, as the entrance to the Peiho River, on which it is located, is blocked by ice during these months.

All merchandise destined for the United States or intended for consumption in the northern provinces of China, of which Tientsin, by its geographical position, is the point of accumulation and distribution, must be transshipped. If goods are exported to the United States, the ports of transshipment are, preferably, Shanghai, not infrequently Hongkong, and sometimes Yokohama. If merchandise is destined for Tientsin, the same ports of transshipment are used.

As regards the movements of goods upon the high seas, this report will cover details as to freight and passenger rates to and from Shanghai, Hongkong, and Yokohama, through rates beyond these ports not being quoted here. Through rates to and from the United States may therefore be obtained by adding to the rates given in this report those quoted at Shanghai, Hongkong, and Yokohama.

It will be unnecessary to touch upon the manner of distributing cargo into the interior, as there are no highways, paved or macadamized, and as merchandise passes out of the hands of foreigners and into native control at Tientsin, it is equally unnecessary to attempt to portray the intricacies of the transportation of cargo by camels, by mule litters, mule back, native carts, river craft, etc., from the interior to this port.

COASTWISE LINES.

At Shanghai, coastwise steamers arrive and depart almost daily, and monthly or bimonthly steamers run to and from Japan.

No through rates for passengers or freight are quoted by the agencies of the various steamship companies whose vessels call at this port. To obtain through rates those given herewith must be added to those given from Shanghai or Hongkong, China, and Yokohama or Kobe, Japan. It rarely happens that passengers take steamers direct to Hongkong from here, as they prefer to transship at Shanghai to steamers of the Messageries Maritimes or Peninsular and Oriental lines.

The various steamship companies making this a port of call and having agencies here are the Canadian Pacific and the Peninsular and Oriental steamship companies, Jardine, Matheson & Co., agents; the Pacific Mail and Occidental and Oriental steamship companies, A. Philpott & Co., agents; the Messageries Maritimes, William Forbes & Co., agents, and the Northern Pacific Steamship Company, Wilson & Co., agents.

The passenger rates are as follows: To or from Shanghai, first class, 40 taels; round trip, 60 taels. To or from Kobe, Japan, first class, \$61 (Mexican); round trip, \$106. From Kobe to Yokohama, \$10.

In this report, wherever tael prices or teal rates are given it may be assumed for the purpose of calculation that a tael is worth \$1.43 (Mexican). To calculate the value of the Mexican dollar in terms of United States gold the rate of the day must be taken, as the value of the Mexican dollar is constantly fluctuating.

The rates to or from Shanghai given above are by steamers of the China Navigation Company, Butterfield & Swire, agents; the Indo-China Navigation Company, Jardine, Matheson & Co., agents, and by the China Merchants' Steamship Navigation Company. The rates quoted to or from Kobe, Japan, are by steamers belonging to the Nippon Yusen Kaisha, A. Philpott & Co., agents.

The above-mentioned steamship companies are the most important operating coastwise services in China and Japan, and deserve a few words from a Tientsin point of view.

The service on these lines is in all respects first class, the steamers being officered by Europeans or Americans. Compared with those of the great ocean lines, the vessels are small, averaging between 800 and 1,000 tons net register.

China Navigation Company.—The agents for this line of steamers at Hongkong and throughout China and Japan are Butterfield & Swire. It is an English company, with central office in London, John Swire & Sons, agents. The China Navigation Company never sends ships to Europe, but works in conjunction with the Ocean Steamship Company. The fleet of the company is composed of thirty-one steamers, ranging in tonnage from 560 to 2,000. Of these steamers the *Chung Kiang* (801

tons), *Wuchang* (801 tons), and *Tungchow* (952 tons), run regularly between Tientsin and Shanghai. Occasionally other steamers are put upon the route, and in this way an almost daily service is maintained. It is said that these three steamers are the best equipped for passenger service on the coast of China. This company also maintains a service, with two steamers, the *Nan-chang* and *Kwei-yang*, between Tientsin and Hongkong and Canton, but as passengers rarely travel by these steamers the agents are unable to quote fixed passenger rates.

Indo-China Steam Navigation Company.—This is an English corporation, with main office in London. It operates a coastwise service between ports of China to India, and occasionally to Japan. The fleet is composed of twenty-three steamers, including those plying on the Yangtse River.

The regular steamers of this line on the service between Tientsin and Shanghai are the *Lienshing* (1,049 tons), the *Pechihli* (881 tons), and the *El Dorado* (892 tons). These vessels are excellently equipped for passenger service and are officered by Europeans. Jardine, Matheson & Co. are agents in all China ports where their firm is represented.

China Merchants' Steam Navigation Company.—This is the great line under Chinese control, and is composed of a large number of ships, of which the following, all splendidly equipped for passenger service, run regularly between Tientsin and Shanghai: The *Hsin Yu* (1,027 tons), the *Hsin Chi* (1,063 tons), the *Hsin Fung* (1,063 tons), the *Hasan* (863 tons), and the *Haeting* (1,099 tons). These vessels are officered by Americans and Europeans. Captain Patterson, an American, of the *Hsin Chi*, has lately completed in the service of this company five hundred round trips between Tientsin and Shanghai. He is a favorite among the foreign residents of the East, and his ship always arrives with a number of passengers, many of whom time their voyage to Tientsin in order to travel with Captain "Pat."

Nippon Yusen Kaisha.—This is the great Japanese line, and a regular service is maintained between Kobe, Japan, and Tientsin, touching at Nagasaki, Chemulpo, and Fusan, Korea, and Chefoo, China. During the year 1893 twenty-one round trips were made by the steamers of this line, the *Genkai Maru* (884 tons) making ten, the *Higo Maru* (871 tons) making nine, and the *Sorachi Maru* (950 tons) making two.

The length of time for transit to or from Shanghai is from two and a half to three days in ordinary weather. The trip to Japan takes, with stoppages, about ten days.

FREIGHT RATES.

The following is the freight tariff between Tientsin and Shanghai and Tientsin and Japan:

Articles.	Untt.	For—		
		Shanghai.	Kobe.	Yokohama.
		<i>Tais.</i>		
Bristles.....	Ton.....	2.50	a \$11.00	a \$12.00
Carpet, Chinese.....	do.....		7.50	8.50
China ware.....	do.....	2.50	11.00	12.00
Cocoons, waste.....	Picul.....	.23		
Cotton.....	do.....		.90	1.10
Curios and enamels.....	Ton.....		13.00	14.00
Feathers, pressed.....	do.....	1.60	7.50	8.50
Furs, common b.....	do.....		13.00	14.06
Hair, horse and yak.....	Picul.....	.23		
Human.....	do.....	.45		
Hides and skins, unpressed.....	do.....	.23		
Pressed.....	Ton.....	2.00		
Horsetails, pressed or unpressed.....	do.....	2.50		
Horsehair in cases.....	do.....	2.50		
Horse and yak tails.....	Picul.....		1.50	1.70
Horse skins, unpressed.....	do.....		.60	.70
Pressed.....	Ton.....		8.00	9.00
Jute, unpressed.....	Picul.....	.17	.70	.85
Pressed.....	Ton.....	1.70	7.50	8.50
Leather.....	Picul.....		1.10	1.20
Merchandise, sundry.....	do.....		.80	.90
Do.....	Ton.....		8.00	9.00
Measurement goods, unenumerated.....	do.....	2.50		
Paper.....	Picul.....		1.10	1.20
Rugs.....	Ton.....	2.25		
Silk piece goods.....	Picul.....		11.00	12.00
Straw braid.....	do.....	.40	1.00	1.20
Sundries, stores, etc.....	Ton.....	2.50	8.00	9.00
Wool, unpressed.....	Picul.....	.20	.60	.80
Pressed.....	Ton.....	1.60	8.00	9.00

a Mexican currency.

b For valuable furs the rate is 5 per cent ad valorem to Kobe and 6 per cent to Yokohama.

NOTE.—For curios and ad valorem goods, excepting treasure, the rate is three-fourths of 1 per cent. For treasure the ad valorem rate is one-fourth of 1 per cent to Shanghai, three-fourths of 1 per cent to Kobe, and 1 per cent to Yokohama.

The rates to Chefoo and Newchwang are three-fourths of the Shanghai rates, and from Tientsin to Hongkong double the Shanghai rates.

The above rates of freight include lighterage charges at the bar at the entrance of the Peiho River, known as the Taku bar. Nearly all steamers must be lightened before they can cross the bar, and this has called into existence a company known as the Taku Tug and Lighter Company.

RAILWAYS.

There is a single-track railway now in running order from Tientsin to the eastern terminus of the Great Wall, at Shan Hai Kuan, on the Gulf of Pechihli, a distance of 179 miles. As there are no foreign merchants at Shan Hai Kuan, and as the country traversed consumes but a small amount of foreign goods, it is unnecessary to enter into details as to freight rates. The first-class fare to or from Shan Hai Kuan is \$3.10 (Mexican).

RIVER AND HIGHWAY TRAFFIC.

The maximum fare to Peking in native house boat is \$15 (Mexican), and by cart \$10 (Mexican). The return passage is somewhat cheaper. The trip can also be made by ponies, relays being arranged beforehand. If the journey is made by house boat or cart, the services of a "boy," at about 75 cents per day, are required, and provisions have to be laid in, costing about \$2 or more per day, according to the habits of the individual making the trip. The journey from Tientsin to Peking occupies from two to three days, although the distance is not as great as from New York to Philadelphia.

The trip to the Ming tombs and to the Great Wall beyond is inexpensive, considering that it is made in carts or by mules or ponies. I have heard it estimated that the trip to and from Peking, the Ming tombs, and to the Great Wall north of Peking can be "done" comfortably for about \$125 (Mexican), and this general estimate will be a sufficient guide for travelers anticipating such a journey.

SHERIDAN P. READ,
Consul.

TIENTSIN, August 1, 1894.

HONGKONG.

OCEAN LINES.

Pacific Mail Steamship Company and Occidental and Oriental Steamship Company.—These are the principal steamship lines plying between Hongkong and the United States. The termini are San Francisco and Hongkong, and the ports of call are Nagasaki, Kobe, and Yokohama, Japan, and occasionally Amoy, China, and Honolulu, Hawaiian Islands.

The distances are as follows:

From—	To—	Miles.
Hongkong	Yokohama	1, 200
Yokohama	Honolulu	3, 400
Honolulu	San Francisco	2, 100
Total		7, 100

The fleet of this combination (for these companies have pooled) consists of the four Pacific Mail steamers and the three Occidental and Oriental steamers, as follows:

Name.	Tonnage.	Name.	Tonnage.
China	4, 040	Gaelic	4, 206
City of Peking	5, 080	Oceanic	3, 808
City of Rio de Janeiro	3, 548	Belgio	4, 212
Peru	3, 528		

All these vessels are first class in appointment, service, etc.
 Departures from termini are made about every ten days.
 First-class passenger rates are:

From Hongkong to—	Fare.	Kind of currency.
Nagasaki	\$45	Mexican.
Kobe	50	Do.
Yokohama	60	Do.
Honolulu	130	United States.
San Francisco	185	Do.

Freight rates are dependent altogether on the description and amount of cargo.

Canadian Pacific Steamship Company.—The steamers of this line, which is owned and entirely controlled by the Canadian Pacific Railroad Company, ply between Hongkong and Vancouver, British Columbia, touching en route at Shanghai, Nagasaki, Kobe, Yokohama, and Victoria, British Columbia. The distance between termini by the route taken by these vessels and the distance between the different ports is as follows:

From—	To—	Miles.	From—	To—	Miles.
Hongkong *	Vancouver *	6,289	Nagasaki	Kobe	384
Hongkong	Shanghai	811	Kobe	Yokohama	346
Shanghai	Nagasaki	448	Yokohama	Vancouver	4,300

* Terminus.

There are three vessels operated by the company on this line, viz, the *Empress of India*, the *Empress of Japan*, and the *Empress of China*, each of 6,000 tons and 10,000 horsepower. They are considered first-class in all respects.

Steamers are dispatched triweekly during the summer and monthly during the winter.

The first-class fare between Hongkong and Vancouver is £37 (\$180) and the rate of freight from \$10 (gold) to \$12 (gold) per ton of 40 cubic feet.

Douglas Steamship Company, Limited (Douglas, Lapraik & Co., general managers).—This company operates a line of cargo steamers between Hongkong and Swatow, Amoy, Foochow, Tamsui, and Taiwanfoo, China.

The distances by the route of this line are as follows:

From—	To—	Miles.	From—	To—	Miles.
Hongkong	Swatow	175	Amoy	Tamsui	160
Swatow	Amoy	150	Amoy	Taiwanfoo	155
Amoy	Foochow	185			

The vessels of this line and their tonnage are:

Name.	Tonnage.	Name.	Tonnage.
Haitan.....	1,183	Hailoong.....	785
Namoa.....	863	Formosa.....	674
Thales.....	820	Fokien.....	566

These vessels make three or four trips per week to Swatow and Amoy, one or two to Tamsui, one to Foochow, and one every ten days to Taiwanfoo.

Cabin passage from Hongkong to Swatow is \$15; to Amoy, \$25; to Foochow, \$50; to Tamsui, \$50, and to Taiwanfoo, \$55.

Freights from Hongkong: To Swatow, \$3; to Amoy, \$4; to Foochow, \$6; to Tamsui, \$7, and to Taiwanfoo, \$7 per ton. Special rates are made for large quantities. The rates given are in Mexican dollars.

Northern Pacific Steamship Company (Dodwell, Carlill & Co., agents).—This is a private company, with headquarters at Glasgow. Hongkong and Tacoma, Wash., are the termini, and the main points touched are Amoy, Foochow, and Shanghai, China; Moji, Kobe, and Yokohama, Japan, and Victoria, British Columbia. The last three are regular ports of call, but the others are only called at when sufficient cargo can be obtained.

The total length of the course between Hongkong and Tacoma is about 6,000 miles, divided as follows between main points: Hongkong to Yokohama, 1,600; Yokohama to Tacoma, 4,315 miles.

The company operates three steamers, all sailing under the British flag.

Name.	Gross tons.	Horse-power.	Maximum speed.
Victoria.....	3,167	2,800	<i>Knots.</i> 15
Tacoma.....	2,548	1,500	12
Sikh.....	2,672	2,700	13½

The condition of the vessels is considered good.

Sailings are made about every three weeks, the three vessels of the company making from fifteen to sixteen trips during the twelve months.

The rates for first-class passengers, in Mexican dollars, from Hongkong to Shanghai is \$40; to Kobe, \$50; to Yokohama, \$60; and to Victoria, British Columbia, or Tacoma, Wash., \$225.

The rate for freight per ton of 40 cubic feet or ton of 2,240 pounds from Hongkong to Tacoma is \$10 gold. The rate for freight between intermediate points varies from \$1.50 to \$5 (Mexican) per ton.

Peninsular and Oriental Steam Navigation Company.—The termini of the China service of this company are Hongkong and London, and the main points touched are Shanghai, Nagasaki, Kobe, Yokohama, Singa-

pore, Penang, Colombo, Bombay, Port Said, Brindisi, and Marseilles, and the following are the distances in miles from Hongkong:

To—	Miles.	To—	Miles.	To—	Miles.
Shanghai	870	Singapore	1,437	Port Said	6,584
Nagasaki	1,067	Penang	1,818	Brindisi	7,514
Kobe	1,456	Colombo	3,096	Marseilles	8,092
Yokohama	1,802	Bombay	3,971	London	10,154

The condition of the vessels is good. The total fleet of this company numbers fifty-five vessels, of which fifteen, of from 3,500 to 5,100 tons and 3,500 to 6,000 horsepower, are in use on the London-China line and perform a fortnightly service, and two, of 3,140 tons and 3,500 horsepower, ply between Hongkong and Japanese ports.

The rates for first-class passage from Hongkong are as follows, in Mexican dollars:

To—	Fare.	To—	Fare.
Shanghai	\$40	Egypt	\$460
Yokohama	60	Brindisi	490
India	185	Marseilles	490
Australia (via Colombo)	360	London	525

The average rate of freight from Hongkong to London is 45s. to 50s. (\$10.95 to \$12.17) per ton of 40 cubic feet.

W. E. HUNT,
Consul.

HONGKONG, August 1, 1894.

JAPAN.

GEOGRAPHICAL FEATURES.

The peculiar form of the Empire of Japan, that of a very long and narrow territory, completely surrounded by salt water, extending from a point almost adjoining the frozen regions of Siberian Russia to the tropical waters of the Western Pacific, with an average width of not more than 200 miles, and divided throughout its length by a continuous chain of high hills and mountains, suggests that the traffic of the Empire should be carried on by long lines of railway running parallel and in close proximity to its eastern and western coasts, and by ocean coasting vessels, and this seems to be the idea which has governed the Japanese Government and the various transportation companies in planning railroad and ocean lines. The system of railways along the east coast lacks little of completion; that along the west coast has not yet been commenced. The traffic along the east coast is, therefore, divided by the railways and coasting vessels, and that along the west coast is monopolized by the latter.

RIVERS, CANALS, AND HIGHWAYS.

There are in Japan no navigable rivers or canal lines of any importance. In earlier years a large portion of the traffic of the Empire was carried on over the old imperial highways, the principal among them being the Tokaido, running south from Tokio along the east coast; the Nakasendo, running north and south, but lying farther back and at a greater elevation above the sea; and the Riku-u-Kaido, running north from Tokio. These highways are well built, but very narrow, as they were intended for foot passengers, passengers in jinrikishas and kagos (chairs), and single horses without vehicles. The importance of these highways has departed now and they are used only as a means of local communication between certain towns.

RAILWAYS.

The following list, taken from a semiofficial publication, presents data as to the railways in operation and extensions of the same, those under construction, and those for which franchises were obtained at the last session of the Imperial Diet:

LINES IN OPERATION.

Name.	Miles.	Name.	Miles.
Government railways:		Kobu Railway:	
Tokyo-Kobe	378.31	Shinjiku-Hachioji	22.77
Ofuna-Yokosuka	10.03	Ryomo Railway:	
Obu-Taketoyo	12.01	Oyama-Maebashi	52.17
Maibara-Kanagasaki	31.01	Osaka railways:	
Nagahama-Fukatami	9.60	Osaka-Sakurai	29.10
Baba-Otsu	1.23	Oji-Nara	9.38
Takasaki-Naoetsu	117.10	Total	38.48
Total	557.29	Hankwai Railway:	
Nippon Railway Company:		Osaka-Sakai	6.13
Tokyo-Aomori	454.66	Chikugo railways:	
Shinagawa-Akabano	12.76	Wakanatsu-Iizuka	24.38
Omiya-Maibashi	51.14	Nokata-Kaneda	6.26
Utsunomiya-Nikko	25	Total	30.58
Iwakiri-Shiogama	4.23	Settsu Railway:	
Uyeno-Akihanohara	1.15	Amagasaki-Ikeda	8.35
Oyama-Mito	41.45	Iyo Railway:	
Mito-Nakagawa	0.62	Takahama-Hiradgawara	10.19
Shriuchi-Hachinohe	3.30	Sanuki Railway:	
Total	594.31	Matugame-Kotohira	10.15
Sanyo railways:		Sangu Railway:	
Kobe-Mihara	143.40	Tsu-Miyagawa	23.58
Hiogo-Wadasaki	1.64	Hokkaido railways:	
Total	145.04	Temiya-Horonai	58.02
Kiushu railways:		Horonai-buto-Yakushubetsu	4.39
Moji-Kumamoto	121.31	Mutoran-Sorachifuto	108.43
Tosu-Saga	15.30	Sunagawa-Utashinai	8.64
Total	136.61	Oiwake Yubari	26.49
Kwansei railways:		Total	203.97
Kusatsu-Yokkaichi	49.25	Kushiro Railway:	
Kameyama-Tsu	9.60	Shibecha-Atosanobori	25.78
Total	58.85	Sano Railway:	
		Kudzuo-Koshinagawa	9.50
		Grand total	1,933.75

LINES UNDER CONSTRUCTION.

Government railways:		Nanwa Railway:	
Fukushima-Aomori.....	298.26	Takata-Gojyo.....	16.40
Tsuruga-Toyama.....	123.58	Bantan Railwa.:	
		Shikama-Ikuno.....	29
Total.....	421.84	Settsu Railway:	
Sanyo Railway:		Itami-Namase.....	6
Mihara-Hiroshima.....	45.29	Boso Railway:	
		Sogano-Odzuna.....	11.39
Kiushu railways:		Nara Railway:	
Kumamoto-Matsubishi.....	11	Nara-Kyoto.....	26
Saga-Tsuksasaki.....	17.60	Kobu Railway:	
		Shinjiku-Idamachi.....	8.50
Total.....	28.60	Ota Railway:	
Kwansai Railway:		Ota-Mito.....	12.18
Yokkaichi-Nagoya.....	23.55	Sobu Railway:	
Hoshiu Railway:		Honjo Sakura.....	31.40
Gyohashi-Ikari.....	17.56	Nanyo Railway:	
Kawagoe Railway:		Matsuyama-Gunnaka.....	6.57
Kokubunji-Kawagoe.....	18.20	Dogo Railway:	
Ome Railway:		Dogo-Asami and Matsuyama.....	3.06
Ome-Tachikawa.....	13.07		
Osaka Railway:		Grand total.....	719.61
Tennoji-Mimeda.....	6		

PROJECTED LINES.

Name.	Termini.	Distance.	Capital.
		<i>Miles.</i>	<i>Yen.</i>
Omi.....	Hikone, on the Tokaiko Railway, to Fukagawa, on the Kwansai Railway.	26	1,000,000
Hokuryetsu..	Naoyetsu, on Government railway, to Nuttari, near Niigata.	98.45	3,700,000
Hatause.....	Nara to Sakurai.....	12.17	500,000

EXTENSIONS.

Name.	Extension.	Distance.	Estimated cost.
		<i>Miles.</i>	<i>Yen.</i>
Chikugo.....	Kotake to Sabukuro.....	3.32	123,500
Japan.....	Mito to Iwanuma.....	130	5,640,000
Bantan.....	Ikuno to Wadayama.....	13.40	500,000
Kwansai.....	Isuge to Nara.....	31.57	1,540,000
Chikugo.....	Iizuka to Usui.....	5	129,000
Do.....	Iizukato { Harada.....	15	1,224,884
	{ or Torisu.....	21	
Do.....	Iizuka to Yoshii.....	17	522,486
Iyo.....	Tachibana to Morimatsu.....	2	23,969

The main line and branches between Tokio and Kobe are owned and controlled by the Imperial Government. All other lines are owned and controlled by corporations or private persons under franchise from the Government. Since information is desired only as to main or through lines of traffic, the data herewith refers only to the continuous system of railways extending along the east coast, from Aomori, at the northern extremity of the main island of the Empire, to Tokio, and thence to the southern provinces.

On the Nippon Tetsudo Kaisha (Japan Railway Company), from Tokio to Aomori (454.66 miles), the principal points and distances

from Tokio are: Utsunomiya, 65½ miles; Fukushima, 166 miles; Sendai, 215½ miles; Morioka, 328 miles.

On the Government railway, from Tokio to Kobe (376.31 miles), the principal points and distances from Tokio are: Yokohama, 18 miles; Kodzu, 49 miles; Nagoya, 239.29 miles; Kioto, 329.20 miles; Osaka, 356.04 miles.

On the Sanyo Railway, from Kobe to Hiroshima (189.62 miles), the principal points and distances from Kobe are: Hineji, 34.05 miles; Okayama, 89.09 miles; Onomichi, 137.70 miles.

At present there is connection by means of small steamers plying across a portion of the Inland Sea, between Hiroshima and Moji, a port of the southern island, on the Straits of Shimonoseki; but surveys have been made for connecting Hiroshima by rail with Akamagaseki, a point on the Straits of Shimonoseki opposite Moji, the distance being 156.89 miles.

On the Kiushiu Railway, from Moji to Kumamoto (121.31 miles), the principal points touched and the distances from Moji are: Hakata, 47 miles; Kurume, 69¾ miles, with a branch from Tosu to Saga 15.30 miles long, which it is intended to extend to Nagasaki.

The Tanko Railway, a line 250 miles long, has been constructed and opened in the island of Yesso or Hokkaido, running from Otaru to Sapporo and on to interior points.

Those portions of the Government line lying between Tokio and Yokohama and between Kobe and Kioto have been constructed with double tracks. The standard gauge is 3 feet 6 inches; the roadbed is ballasted with stone and all culverts are constructed of stone; bridges are of steel in most cases, and steel rails are used, varying in weight from 52 to 63 pounds to the yard. The maximum grade for ordinary adhesion is 1 in 40. The lines are well managed and are apparently in good order. Communication is frequent between the larger cities, there being 22 trains daily each way between Tokio and Yokohama, and 14 trains between Kobe and Osaka and Kioto. On the other lines an average of 4 through and 5 local trains a day are run.

Freight charges on the Government lines are fixed according to the established classification of materials, at 2, 3, 4, 5, and 6 sen (1, 1½, 2, 2½, and 3 cents) per picul (133½ pounds) per mile for first, second, third, fourth, and fifth class, respectively, with right to give special rates, averaging about 2 sen (1 cent) per ton per mile, for car-load lots.

Passenger fares on the Government main lines are as follows per mile:

Class.	Sen.	Equivalent in United States currency.	Baggage allowance.
		<i>Cents.</i>	<i>Pounds.</i>
First	3	1.5	140
Second	2	1	80
Third	1	.5	40

On some of the branch lines fares are slightly higher. Charges on the private lines are approximately the same as those on the Government lines.

Parcel freight, or express, is carried on passenger trains at the following rates:

For any distance up to 25 miles.....	per picul (133½ pounds)...	\$0.50
For any distance from 20 to 50 miles.....	do.....	0.75
For any distance from 50 to 100 miles.....	do.....	1.00
And 25 cents for each additional 50 miles over 100.		

Third-class passenger fare is limited by law to 1½ sen (¾ cent) per mile; but the highest third-class fare charged on any railway in Japan is 1.3 sen (6.5 mills) and the lowest 0.8 sen (4 mills) per mile.

The three greatest engineering works which have overcome natural obstacles are: (1) The Gotemba grade, on the Government railway, near Kodzu, between Yokohama and Kioto, where the line passes over the Hakone range of mountains, the ascent on the south side being 1 in 40 for a distance of 15 miles and on the north side 1 in 40 for a distance of 11 miles. (2) The construction of the line over the Usui Pass, on a branch or subsidiary line, a little northwest of Tokyo, there being an ascent of 1 in 15 for 7 miles, in which distance there are 26 masonry tunnels, and 9 canyons are crossed on steel and stone bridges, one bridge having 4 arches of stone. (3) The construction of the line in the Island of Yesso, at a point near Otaru, where for several miles it runs through a groove cut into the side of an almost perpendicular rock cliff overhanging the sea.

OCEAN LINES.

Most of the passenger and freight traffic and coasting business between the different open ports of Japan is handled by European and American steamship companies.

The Nippon Yusen Kaisha (Japan Mail Steamship Company) has by far the greater number of steamers and reaches most of the great ports of Japan, Vladivostok (Siberia), the ports of Korea and China, and all principal points between Yokohama and Bombay.

The Occidental and Oriental Steamship Company and the Pacific Mail Steamship Company, operating under combined schedules, run between San Francisco and Yokohama and the open ports on the eastern coast of Japan, and on to China.

The Canadian Pacific Steamship Company, starting from Vancouver, British Columbia, and the Northern Pacific Steamship Company, starting from Tacoma, Wash., make the same ports on the east coast.

The Peninsular and Oriental, the Messageries Maritimes, and the German Mail lines all run from points in China to Yokohama, touching at intermediate ports on the east coast of Japan.

The following table presents additional information as to the above-named steamship companies:

Name of company.	Control of company.	Ports entered in Japan.	Number of vessels.	Days between sailings.	Average gross tonnage.	Average horse-power.
Nippon Yusen Kaisha.	Partial control by corporation; annual Government subsidy, \$880,000.	All principal ports.	65	1	.....	.....
Pacific Mail Steamship Co.	Corporation	Yokohama, Kobe, and Nagasaki.	4	20	4, 239	.....
Occidental and Oriental Steamship Co.	Corporation .....	.....do	3	20	4, 073	.....
Canadian Pacific Steamship Co.	Corporation; mail subsidy from British Government.	Yokohama, Kobe, and sometimes Nagasaki.	3	a 21 b 28	5, 904	1, 000
Northern Pacific Steamship Co.	Corporation	Yokohama, Kobe, and Nagasaki.	3	21	2, 796	2, 333
Peninsular and Oriental Steam Navigation Co.	Corporation; mail subsidy from British Government.	.....do	2	14	3, 126	3, 500
Compagnie des Messageries Maritimes.	French Government.	.....do	12	14	3, 442	2, 900
Norddeutscher Lloyd's.	Corporation; mail subsidy from German Government.	.....do	1	28	3, 207	2, 200

a Summer.

b Winter.

NOTE.—Steamers of the Pacific Mail and the Occidental and Oriental steamship companies run on joint schedule; the period between sailings is, therefore, about ten days. The steamers of the Peninsular and Oriental and Norddeutscher Lloyd's companies run in connection with their respective main lines, transferring at Hongkong. Both lines run extra steamers when traffic requires it.

It would be useless to attempt to make any definite statement of the rates in force on the steamship lines, as they are generally a matter of individual arrangement and contract.

SUPPLEMENTARY REPORT.

I inclose herewith a recently published list of foreign steamers purchased and added to the Japanese merchant marine since the declaration of war between China and Japan, with their tonnage, gross and registered. Most of these steamers have been purchased by the Nippon Yusen Kaisha (Japan Mail Steamship Company), a private corporation operating under a subsidy granted by the Japanese Government.

Name.	Tonnage.		Name.	Tonnage.	
	Gross.	Registered.		Gross.	Registered.
Otaru-maru	2, 374. 80	1, 507. 44	Taiyo-maru	1, 267. 72	786. 00
Kokura-maru	2, 389. 38	1, 567. 83	Yamaguchi-maru	3, 033. 67	1, 910. 74
Fusan-maru	2, 362. 00	1, 541. 00	Yamato-maru	3, 067. 03	1, 656. 20
Sakura-maru	2, 818. 99	1, 827. 45	Oyo-maru	1, 892. 00	1, 173. 17
Himeji-maru	3, 008. 00	1, 940. 00	Tateyama-maru	2, 162. 20	1, 340. 57
Ujina-maru	2, 375. 69	1, 446. 32	Kagoshima-maru	4, 139. 81	2, 652. 48
Shibata-maru	2, 690. 35	1, 714. 38	Anoura-maru	2, 295. 20	1, 494. 36
Fukuoka-maru	2, 538. 38	1, 662. 98	Kokwo-maru	542. 70	326. 48
Matsuyama-maru	2, 958. 68	1, 934. 03	Kinshu-maru	3, 595. 67	2, 312. 18
Toyohashi-maru	2, 878. 92	1, 878. 92	Riojun-maru	4, 670. 50	3, 010. 58
Izumi-maru	3, 224. 87	1, 999. 40	Tosa-maru	5, 402. 00	3, 563. 32
Soya-maru	1, 725. 62	1, 069. 89	Moji-maru	2, 040. 00	1, 590. 00
Iburi-maru	2, 520. 78	1, 562. 88	Jinsen-maru	2, 189. 81	1, 411. 32
Shinshu-maru	2, 838. 63	1, 577. 08	Gensan-maru	2, 193. 00	1, 432. 00
San-yu-maru	588. 22	364. 69	Tamahime-maru	2, 035. 68	1, 570. 76
Yedo-maru	1, 070. 00	1, 036. 00			
Doyo-maru	2, 089. 77	1, 132. 74			
			Total	81, 564. 67	51, 599. 67

N. W. McIVOR,
Consul-General.

KANAGAWA, January 23, 1895.

KOREA.

There are no railways in Korea; neither are there any highways, mail lines, or other routes of communication, except mere bridle paths over which travelers ride on horseback or are carried in chairs by native porters. Nearly all freight is conveyed over these paths on the backs of men, ponies, and oxen, though ox carts of the clumsiest build are sometimes used; but these paths generally are impassable for wheeled vehicles.

The Nippon Yusen Kaisha (Japan Steamship Company) has a line of fine modern steamers, furnished with lights and all modern conveniences, which call at Fusan and Wonsan (Gensan), Korea, on their way to Vladivostok, Siberia. Another line of the same company has steamers running to Tientsin, China, which touch at Fusan and Chemulpo, affording good and ample accommodation for passengers and freight for Korean ports.

[In a later report, dated April 3, 1895, Consul Sill states that the service of the Nippon Yusen Kaisha to Korean ports has been discontinued since the commencement of hostilities between China and Japan, and while other Japanese steamers call frequently, the vessels are usually either transports or freight boats in some way connected with Japanese military operations.]

Other Japanese steamship companies maintain lines of freight ships over the same routes, and a Chinese company has a line of two small steamers plying between Shanghai and Chemulpo by way of North China ports.

On the river, between Chemulpo (the port) and Seoul (the capital), a distance by water of 56 miles, a number of small steam launches do duty, together with countless junks of every description.

All mails are carried by men.

JOHN M. B. SILL,
Consul-General.

SEOUL, *June 6, 1894.*

COCHIN CHINA.

OCEAN LINES.

The great through line for commerce and passenger traffic between Saigon and Europe and Saigon and Japan and intermediate ports is the Compagnie des Messageries Maritimes.

The termini are Marseilles and Yokohama, and the steamers touch at Alexandria, Port Said, Suez, Aden, Colombo, and Singapore, en route to Saigon. After leaving this port they touch at Hongkong, Shanghai, and Kobe, en route to Yokohama.

The total distance from Marseilles to Yokohama is 10,135 miles, viz: Marseilles to Saigon, 7,265; Saigon to Hongkong, 915; Hongkong to Shanghai, 870, and Shanghai to Yokohama, 1,085 miles.

The following nine steamers are at present performing the regular service between Marseilles and Yokohama:

Name.	Gross tonnage.	Horse-power.	Name.	Gross tonnage.	Horse-power.
Oceanien	4,259	3,400	Melbourne	4,080	3,400
Yarra	4,255	3,400	Natal	4,017	3,400
Sydney	4,232	3,400	Saghalien	4,050	2,900
Calédonien	4,232	3,400	Oxus	3,790	2,900
Salazie	4,255	3,400			

A steamer starts from Marseilles every alternate Sunday, and performs the passage to Saigon in about twenty-six days. The passage from Saigon to Yokohama takes twelve days.

The rates of passage for first-class accommodation (including fare and table wine) from Marseilles are:

To—	Francs.	Equivalent in United States currency.	To—	Francs.	Equivalent in United States currency.
Alexandria	350	\$67.56	Saigon	1,550	\$301.15
Port Said	400	77.20	Hongkong	1,715	330.96
Suez	450	86.85	Shanghai	1,715	330.96
Afen	575	108.88	Kobe	1,715	330.96
Colombo	1,200	231.69	Yokohama	1,715	330.96
Singapore	1,400	270.20			

Freight rates are: Marseilles to Saigon, 60 francs (\$11.58) per ton of 1,000 kilograms (2,204.6 pounds).

E. SCHNÉEGANS,
Commercial Agent.

SAIGON, January 1, 1895.

PHILIPPINE ISLANDS.

RAILWAYS.

The Government assisted the construction of the only railway in these islands by making valuable concessions of land with right of way the entire length of the line, and by guaranteeing 8 per cent per year upon the stock of the road for the period of ninety-nine years, when it becomes the property of the State. So far (about three years) the road has paid more than 10 per cent per annum to its shareholders.

This railway, known as the Manila and Dagupin Railway, is single track, English gauge. It is very well built; steel rails are used the entire length; all bridges are of stone or iron or both, and the bed is well ballasted. The station buildings are very substantial.

The line runs from Manila to Dagupin, a distance of 123 miles. There are no large or important towns on the line except the termini mentioned, but small villages are numerous.

The equipment of the line is all of English make; the engines are small but well made; the cars are the usual English style, divided into first, second, and third class compartments. As the cars are all short, there is a great deal of swaying motion when the train moves at high speed. I am informed that one express train runs at the rate of 45 miles per hour, which is considered very fast in this country.

OCEAN LINES.

There is one line from Manila to Liverpool known as the *Compañía Transatlántica*, composed of three large steamers, averaging 4,500 tons and about 4,000 horsepower each. The average speed is 17 knots. This line maintains a monthly service to Europe, calling at Singapore, Colombo, Aden, Suez, Port Said, and Barcelona en route.

The passenger rates from Barcelona to the Philippine Islands, per the steamships of the *Compañía Transatlántica*, are:

To—	Rates.		
	First class.	Second class.	Third class.
Port Said.....	\$77. 20	\$61. 86	\$30. 88
Suez.....	86. 85	69. 48	35. 04
Aden.....	168. 88	135. 10	67. 55
Colombo.....	193. 00	135. 10	57. 90
Singapore.....	265. 38	193. 00	115. 80
Manila.....	243. 54	291. 78	127. 38

The present rates of freights, per ton, from the Philippines to Liverpool, according to figures supplied by the agent of the company, are:

Articles.	Pesos.	United States equivalent.
Sugar, dry.....	65. 00	\$12. 55
Coffee.....	80. 00	15. 44
Abaca.....	82. 50	15. 83
Copra.....	75. 00	14. 48
Cocanut oil.....	75. 00	14. 48
Furniture, personal effects, books, etc.....	75. 00	14. 48
Gums and resinous products.....	75. 00	14. 48

NOTE.—Ten per cent is added to these rates when goods are sent to ports where transshipments take place.

Another line has been formed in Spain to compete with the *Compañía Transatlántica*.

This new company has for its agents in Barcelona the firm of Pinillos, Saenz & Co.; the agents here are Smith, Bell & Co. The first steamer is due here in August, when a great cut in freight rates is expected. It is unfortunate that this new line has no passenger accommodations, but as soon as arrangements can be made passenger steamers will be put on.

There are four lines of steamers between this port and Hongkong, and the passenger rate is \$50 (Mexican) one way, and \$80 for the round

trip. Freight rates vary from \$10 to \$20 per ton, according to the class of goods, but it is impossible to give correct rates, as they fluctuate greatly, and many shipments are made on special rates.

INTERISLAND AND COASTWISE TRADE.

There are many local lines of steamers plying between Manila and the provinces, the largest being the *Compañía Marítima*, which has twenty-eight steamers, with a total of 25,000 tons.

Ynchansta & Co. have two small steamers of 1,000 tons; S. P. Yanger, one small steamer of 500 tons; De la Rama & Bros., three small coasters of 500 tons; Aldecoa & Co., two coasters of 500 tons, and Armstrong & Sloan three small coasters of 400 tons.

The usual points touched by these steamers include all the ports in the Philippine group; also the Caroline and Marianas islands.

Passage and freight rates are by mutual agreement, but freight rates generally run from \$2 to \$5 per ton, according to distance. Rates of passage vary from \$80 to the Carolines to \$30 or \$40 to Iloilo and Cebu.

Before the formation of the *Compañía Marítima*, which is a consolidation of several small companies, passage and freight rates were much less. The rates are now 33 per cent higher than before the formation of the new company.

Nearly all the steamers were built in England, and are very well adapted to this trade, which demands a good class of ships in order to withstand the severe weather during typhoon season. The steamers are all fitted with first and second class passenger accommodations, and are models of cleanliness. The officers and engineers are always European, the rest of the crew being composed of Chinese and natives. The steamers are not fast, seldom exceeding 12 knots per hour, but all are fitted with the latest improvements as to engines and boilers.

ISAAC M. ELLIOTT,

Consul.

MANILA, July 1, 1895.

AUSTRALASIA.

NEW SOUTH WALES.

OCEAN LINES.

Sydney is the metropolis not only of New South Wales but of Australasia. During 1893 there were 2,914 entries of vessels into Port Jackson (Sydney Harbor), with an aggregate tonnage of 2,590,371, and 2,916, with an aggregate tonnage of 2,602,957 tons, cleared; a grand total of 5,830 vessels, with a tonnage of 5,193,328 tons. Of these vessels over four-fifths were steam craft.

The following foreign steamship lines terminate at Sydney. All the Australasian lines also make this a terminal point:

Peninsular and Oriental Navigation Company.—The steamers of this line run between Sydney and London, touching at Melbourne, Aden, and Brindisi. There are twelve steamers, one leaving each alternate Monday. They are splendid vessels, having a total registered tonnage of 72,000, with 83,000 effective horsepower. They carry mails, passengers, and general freight. The voyage from Sydney to London averages forty-two days, and from London to Sydney forty-five days, although the direct mails and passengers, which change at Brindisi and thence proceed by rail, reach London in thirty-five days and return in thirty-seven days. The fare is from £60 to £70 (\$291.96 to \$340.62), and the freight rate is from £2 7s. to £2 10s. (\$11.43 to \$12.16) per ton.

Orient Line.—This company has nine large vessels, with a registered tonnage of 54,000 and 70,000 effective horsepower. The steamers run between Sydney and London, one leaving each terminal point on alternate Mondays. This gives a direct London mail and through passenger steamer every Monday. Vessels of this line make about the same time as those of the Peninsular and Oriental Line, and the fare and freight rates are about the same as of that company.

Messageries Maritimes.—This is a French line, having six very fine steamers, with an average tonnage of over 6,000 and about 7,000 effective horsepower, furnishing a monthly mail service to Marseilles. Fare and freight the same as by the two foregoing lines.

Norddeutscher Lloyds.—This company has seven fine steamers plying between Sydney and Amsterdam, one leaving Sydney each month, carrying mails and general passengers. The seven vessels have an aggregate of 32,200 tons capacity and 35,000 registered horsepower. Through passenger and freight rates are the same as those of the three foregoing lines.

German Australian Steamship Line.—This company has seven steamers of an average of 3,500 tons, making 11 knots per hour. They are not calculated to carry mails or first-class passengers, but carry all classes of freight and steerage passengers. The service is monthly between Sydney and Hamburg. This line carries enormous quantities of wool, and before the general strikes crippled the Newcastle (New South Wales) mines they carried great quantities of coal. The voyage of these steamers usually takes fully forty-six days.

The route of all the foregoing lines is via the Suez Canal.

China Navigation Company.—This company has four iron steamers on the line between Hongkong and Sydney. They depart about once in eighteen days, the voyage occupying twenty-two days. The steamers have an average capacity of about 2,500 tons and about 3,000 horsepower. They carry mails and first-class passengers. The through fare is £33 (\$160.58), and the through freight rate is about 25s. (\$6.08) per ton.

Eastern and Australian Steamship Company.—These steamships run between Sydney and Hongkong. The company has four fine steamers, leaving about once a month. The vessels have an average of about 3,000 tons, and carry mails and all classes of passengers. Time of voyage averages twenty-two days. The through fare is £33 (\$160.58).

Port Line.—This line consists of ten large steamers, aggregating 62,000 tons, running between Sydney and London. They are fine cargo steamers and make good runs, but have no stated time for departure, though it is regarded as a monthly service. The line has no subsidy, and carries no mails and but few first-class passengers, though fairly well fitted for the accommodation of a moderate number.

Oceanic Steamship Company.—This company has three excellent, though not large, steamers plying between Sydney and San Francisco. They are about 3,000 tons. Two of them are American-built ships and are splendid vessels for their size. Only these two small steamers among all that come to this great country carry the Stars and Stripes. The service is a monthly one, and the vessels carry mails, all classes of passengers, and general cargo. The steamers stop at Auckland, Apia, and Honolulu, and make the voyage in twenty-five days. The average fare is £40 (\$194.64), and the freight rate 40s. (\$9.73) per ton.

Canadian Pacific Steamship Company.—This company has two rather fine steamers of 3,500 tons plying between Sydney and Vancouver. The voyage occupies twenty-two days. The vessels carry mails, all classes of passengers, and general cargo. This, too, is a monthly service. The fare is £40 (\$194.64), and the freight rate 40s. (\$9.73) per ton.

White Star Line.—This company has three fine steamers plying between Sydney and London, via Cape of Good Hope. They are of about 3,500 tons and 3,000 horsepower, and carry general cargoes, mails, and all classes of passengers. The voyage occupies fifty days. They leave this port about once every six weeks.

Lund's Line.—This company has four new and good steamers running on the same route as the White Star Line and performing the same service with the same efficiency. The power and capacity of their vessels is about the same as those of the White Star Line. They leave this port irregularly about once a month.

Gibb Line.—This line consists of four iron steamers of about 3,500 tons and 3,000 horsepower, plying between Sydney and China and Japan. They carry mails and general passengers, averaging a trip about every six weeks.

The above are all the lines plying between Sydney and foreign ports.

The total tonnage inward and outward of this port for 1893, aside from the intercolonial traffic, was 4,513,676, over four-fifths of which was carried by these various lines of steamers.

INTERCOLONIAL LINES.

There are five lines of steamers, averaging nearly 3,000 tons, of 2,200 horsepower, running between Sydney and intercolonial ports, to wit, to Melbourne (Victoria), Adelaide (South Australia), Perth (Western Australia), Hobart (Tasmania), and Brisbane (Queensland). These five lines have seventy-two vessels, all iron, mostly of modern build and first class.

Adelaide Steamship Company.—This company has seventeen ships, one leaving Sydney every third day. They carry no mails, but all classes of passengers and general cargo. The fare to Melbourne is £1 5s. to £2 (\$6.08 to \$9.73); to Adelaide, £2 15s. (\$13.38); to Brisbane, £1 to £2 (\$4.86 to \$9.72); to Perth, £7 10s. (\$36.50). Freight charges vary very greatly according to class and activity of business.

Australian United Steam Navigation Company.—This company has thirty vessels, of about the same class and capacity as those of the Adelaide company. They make the same points as the former line and perform about the same service, with a branch also to Fiji. A steamer leaves Sydney about each alternate day.

Huddart-Parker Company.—This company has five steamers, of about the same class as those of the foregoing lines. One of their branches runs to Auckland and carries mails. The vessels are fitted up for general passenger service.

Howard Smith Company.—This company has about twenty steamers, of about the same class as the other intercolonial ships, which run from Sydney to Melbourne, Adelaide, Perth, Brisbane, and northern ports, leaving Sydney three times per week. They carry no mails.

Union Steamship Company.—This company has about twenty-five steamers, all first-class vessels of about 1,800 tons. They carry mails to Auckland, and leave Sydney twice a week.

The intercolonial traffic entered and cleared at Sydney in 1893 amounted to a grand total of fully 2,500,000 tons.

RAILWAYS.

All the "great through lines" of land transit are owned and operated by the Colonial Government. These public railways are substantial in construction, and are maintained in excellent condition. The shops, stations, depots, etc., are very different from those in the United States, but are well built, and answer the purpose for which they were constructed admirably.

The railroad mail service is quite efficient, and I think for safety and promptness in the delivery of mails there are few reasons for complaint.

The passenger service would hardly answer the demands of our people, but is quite satisfactory to the people here. There being practically no climatic disturbances, the trains are regular and accidents

very few. During several years the rate of casualties to persons was 0.4 killed and 2.5 injured per 1,000,000.

The passenger service, as far as comfort is concerned, is a little primitive, as the Continental coach is still used on the main lines, though there are a few Pullman sleepers, usually a little narrower than the American Pullman and but indifferently upholstered and fitted.

The freight cars—"goods vans"—are quite suitable for the trade. They are short trucks, with four open wheels, and with a capacity of 6 tons.

The public railroads are divided into three distinct systems, designated as the Southern, the Western, and the Northern. The railroads of this colony are of the standard gauge.

The Northern System runs north from Sydney, via Newcastle, to Wallangra, at the Queensland border a total distance of 491 miles, with a branch leading from Werris Creek to Narrabri, toward the interior, a distance of 90 miles.

The principal towns on this main line and the distances from Sydney are:

Town.	Miles.	Town.	Miles.
Gasford.....	50	Tamworth.....	281
Newcastle.....	102	Armadale.....	358
Singleton.....	147	Glen Jones.....	422
Murrundi.....	217	Jennings.....	491
Werris Creek.....	254		

On this line there is one through passenger train each day, and between Sydney and Newcastle three each day.

The Southern System runs in a southwesterly direction from Sydney to Albury, a distance of 386 miles. Albury is on the border of Victoria, and at this place the change is made for Melbourne. Owing to a change in the gauge, there are no "through trains," though they are called "through trains," as connections are made, losing only the necessary time for transferring mails, luggage, express matter, passengers, etc.

The main towns on this line and the distances from Sydney are:

Town.	Miles.	Town.	Miles.
Campbelltown.....	34	Cootamundra.....	253
Goulbourn.....	134	Junee.....	287
Yass.....	187	Wagga Wagga.....	309
Harden.....	228	Albury.....	386

There are two trains daily, with more frequent trains to points nearer to Sydney.

At Junee, 287 miles from Sydney, there is an important branch leading south to Hay, on the Murrumbidgee River, a distance of 125 miles, and 454 miles from Sydney. This point is the center of the famous

Riverina district, one of the best pastoral sections of New South Wales. It is almost exclusively devoted to the wool-growing industry.

This Southern System is by far the most important, not only as reaching the most productive country, but as leading to the important seaport of Melbourne, in the Colony of Victoria.

The Western System runs in a rather direct northwest course to the interior, terminating at Bourke, 503 miles from Sydney. Bourke is far in the interior, and is the center of a vast pastoral country and of a large wool trade, the wool being brought there for many miles by camel trains. It is claimed that the use of camels has made accessible much otherwise inaccessible country. When the seasons are not too dry, the pastoral products are taken from Bourke down the Darling River, via the Murray River, or by rail from Echuca to Melbourne.

The chief towns on this route and the distances from Sydney are:

Town.	Miles.	Town.	Miles.
Penrith.....	34	Orange.....	192
Mount Victoria.....	77	Dubbo.....	278
Wallerawang.....	105	Nyngan.....	397
Bathurst.....	145	Bourke.....	503
Blayney.....	172		

The road extends from Sydney in the direction of the Blue Mountains, the upper level of which it reached, above Emu Plains (36 miles), originally by a system of zigzag lines (called in the United States "a switchback"), and now by a direct line of steep gradient which enables the locomotive to drag its heavy freight up the eastern slope of the mountains. The line runs along the top of the range until it descends into the valley by another and more important zigzag, the construction of which is regarded as a triumph of engineering skill.

MILEAGE, COST, FARES, FREIGHTS, ETC.

There is a total mileage of standard-gauge railroads in this Colony of 2,351, which is 1 mile for every 492 of the population, or 1 mile for every 128 square miles. Of this total all but 149 miles is single track. The cost per mile, open to traffic, was £14,743 (\$71,740), and the aggregate cost, including equipment, was £34,657,571 (\$168,643,740).

The cost of original construction, as well as of operation, was enhanced by the topography of the country, as there are 629 miles of grades varying from $1\frac{1}{4}$ to $3\frac{1}{2}$ per cent. The steepest grades, too, are on the southern and western main lines, over which most of the traffic passes. The railroad commissioners in their report state that the gradients are steeper and the curves sharper on the lines in this Colony than on the Alpine lines.

The passenger fares vary somewhat on the different systems, and instead of having a rate declining with distance they increase in some cases, especially outside the suburban area. As fares seem to be based,

in most cases, on mileage, I think the statement of rates can be made more comprehensive by giving fares at stated distances. On the Southern and Southwestern lines the fares are:

First 5 miles, 26 cents; 10 miles, 49 cents; 20 miles, 96 cents; 50 miles, \$2.40; 100 miles, \$4.74; 200 miles, \$9.54; 500 miles, \$20.22.

It will be seen that the average is above 4 cents per mile.

On the Northern and Northwestern systems and their branches the fares are:

First 5 miles, 18 cents; 10 miles, 30 cents; 20 miles, 60 cents; 50 miles, \$2.34; 100 miles, \$4.98; 200 miles, \$9.84.

These are for first-class passage; the rate is one and one-half fare for round-trip tickets. There are also special rates for weekly and monthly tickets, with many holiday rates.

The freight charges are different in some respects on the various roads. On the Southern, from Hay to Sydney, the freight charges per truck (carrying 6 tons) are: For sheep, \$41.84 for the through trip of 454 miles, and for cattle, \$40.58; for wool, the average on the three classes on the same run is \$18.11 per ton. The following table gives rates by a method which will enable an inquirer to make rather close calculations for all distances per truck for sheep:

Distance.	Sterling.			United States equivalent.
	£	s.	d.	
1 to 2 miles.....	0	15	4	\$3.90
50 miles.....	1	13	4	8.14
100 miles.....	3	3	4	15.40
200 miles.....	4	18	9	23.91
300 miles.....	6	7	11	31.11
400 miles.....	7	6	3	35.58
500 miles.....	7	17	11	38.65

The average is about 5 cents per ton per mile. There are special rates for broken lots to agricultural fairs and for Sydney market days.

Freights are based upon a rather complicated classification. There are six classes, with six prices. Under the general head of "special classes" there are three subclasses, to wit: "Miscellaneous" and "A" and "B," and a "numeral," numbered first, second, and third. The miscellaneous covers cheap, bulky products, such as firewood, fire clay, flagging stones, straw, bones, coal, etc. Class A includes coarse vegetables, such as carrots, pumpkins, etc.; also roofing, tiles, heavy woods, etc.; and Class B includes such products as grain in sacks, poultry in coops, dairy products, etc.; while the first, second, and third subclasses include all classes of finer goods, the price varying with value and care necessary for safety and good order.

The following table will give a correct idea of rates in all classes:

Distance.	Special classes.			Numeral classes.		
	Miscellaneous.	A.	B.	First.	Second.	Third.
1 to 10 miles.....	\$0.27	\$0.48	\$0.52	\$1.14	\$1.28	\$1.56
25 miles.....	.62	.82	1.12	2.43	2.89	3.79
50 miles.....	1.16	1.46	2.13	2.61	5.57	7.55
100 miles.....	2.00	2.43	4.19	8.79	10.87	14.98
200 miles.....	3.65	4.54	7.62	16.09	19.74	27.62
300 miles.....	6.08	5.86	10.05	21.18	28.76	15.58
400 miles.....	7.30	7.22	12.49	26.28	32.69	45.51
500 miles.....	7.09	8.56	14.92	31.39	39.09	54.45

There is a rather complicated subspecial list of articles, with varied rates, but the above will convey a practical idea.

Freight trains vary in frequency with the different seasons and with change of business activity.

HIGHWAYS.

As the interior is reached by railway, there are no highways worthy of special mention.

GEORGE W. BELL,
Consul.

SYDNEY, July 6, 1894.

VICTORIA.

OLD AND NEW OCEAN SERVICE.

To the facilities which have been created for rapid and easy communication, both internal and external, the people are indebted in a large degree for the remarkable development of the Australasian colonies. Less than forty years ago, not a single mile of railway had been constructed in any one of the Australasian colonies; at the close of 1892, there were open no less than 12,571 miles of Government and private lines. In 1850, the arrival here of a steamer of more than 1,100 tons was looked upon as a great event; to-day vessels of 7,000 tons register are to be seen in all the great ports of Australasia.

The shipping trade of the colonies may truthfully be said to have progressed by leaps and bounds. Its importance is attested by the eloquent fact that the great maritime nations of Europe have opened up direct communication with the principal ports, and its magnitude may be gauged by the fact that the number of vessels which arrived at and departed from the various ports during the year 1892 was 17,512, having an aggregate tonnage of 17,213,970. But other and greater changes have been effected in the communication with the Old World than a mere increase in the size of the steamers or in the number of arrivals and departures. The opening of the Suez Canal caused

a complete revolution in the transoceanic services, and the remarkable progress which can be said to date from that great event has never since been allowed to come to a standstill, thanks to the enterprise of the great rival shipping companies, whose magnificent steamers ply between the ports of Australasia and Europe.

The continual improvements which are being made in naval architecture and engineering have enabled these companies to put on the Australasian service vessels which may be described as floating palaces, and whose rate of speed must seem little short of miraculous to such as remember the time when a voyage between the mother country and the southern colonies was seldom accomplished in less than one hundred days.

The first foreign trading vessel which arrived at Sydney, then the only Australian port, was the brigantine *Philadelphia*, flying the Star and Stripes, November 1, 1792. Although the cargo brought by this vessel realized a high profit, foreign merchants were chary of forwarding cargoes to Australia because of the length of the voyage and the numerous sea risks, the voyage of the *Albion*, occupying three months and fifteen days from England to Sydney, being deemed a wonderfully rapid passage. With the progress of Australian settlement the number of ships arriving from Great Britain and other countries began to increase, and to meet the new development of trade various lines of clipper vessels were established by British firms, with the object of reducing as largely as possible the time occupied by the voyage. Among these, the Black Ball Line, so named from the distinguishing flag carried by the ships of Green & Co., of London, stood deservedly high. But just as the sailing vessels had reached the highest point of perfection possible with canvas alone, those propelled by steam power began to successfully rival them. The first steamer reaching Australia from England was the *Sophia Jane*, of 256 tons burden. She arrived at Sydney on May 16, 1831, and was intended for the trade between that port and Newcastle. Subsequently several attempts were made to establish a regular steam service between Great Britain and Australia, but the quantity of coal necessitated by the voyage round the Cape formed a serious obstacle. The establishment of the overland route, suggested by Lieutenant Waghorn, across the Isthmus of Suez aided in lessening the time occupied in reaching India from Europe, and indicated to the Peninsular and Oriental Steam Navigation Company the possibility of establishing regular steam communication with Australia, passengers and mails being transhipped at Alexandria or Suez. When the Suez Canal was opened, this company, which had finally obtained the contract for carrying the Australian mails, abandoned the system of transshipment across the Isthmus their vessels proceeding direct from Southampton to Aden, where the routes to Australia and India branched off. This prepared the way for the wonderful development

of the steam shipping trade between Europe and Australia, sailing vessels and some steamers still using the long sea route via the Cape of Good Hope or Cape Horn.

AMERICAN-AUSTRALIAN OCEAN LINES.

The continents of America and Australia are connected by two regular steamship lines, each being a monthly service, namely, the Oceanic Steamship Company, of San Francisco, and the Canadian-Australian Steamship Line, the former plying between San Francisco and Sydney, New South Wales, and the latter between Vancouver, British Columbia, and Sydney.

Oceanic Steamship Company.—The service of this company consists of three steamers, viz:

Name.	Tonnage.	Horse-power.
Monowai	3,433	3,000
Alameda	3,158	3,000
Mariposa	3,158	3,000

These vessels leave Sydney, Auckland, and Honolulu every four weeks, an almost daily service connecting Sydney with Melbourne and other Australian and New Zealand ports.

The steamers of the Oceanic service are exceptionally high class, with very fine passenger accommodation, and are of great speed. They are fitted with electric lights, and are especially adapted for tropical voyages, having ample ice chambers, the latter insuring a continuous supply of fresh provisions throughout the voyage.

Leaving Sydney, the steamers call at Auckland, Apia, Honolulu, and finally San Francisco, the length of the total line being 7,281 miles. The distances between the main points touched are Sydney to Auckland, 1,281 miles; Auckland to Honolulu, 3,900 miles; Honolulu to San Francisco, 2,100 miles.

The passenger rate (saloon) between Sydney and San Francisco is £40 (\$194.66), and between the intermediate points as follows: Sydney to Auckland, \$24.33; Auckland to Honolulu, \$145.99, and Honolulu to San Francisco, \$48.66, in either direction.

Freight, per ton, from Sydney to San Francisco is from £2 10s. (\$12.16) to £3 (\$14.59); from Sydney to Auckland, 15s. (\$3.65), and from Auckland to Honolulu and San Francisco from £2 (\$9.73) to £2 10s. (\$12.16).

Canadian-Australian Line.—This company inaugurated, May 18, 1893, a monthly service, consisting of two vessels possessing every possible convenience and a high rate of speed. The two vessels of this service are:

Name.	Tonnage.	Horse-power.
Warrimoo	3,400	4,500
Arawa	5,026	5,000

The route is from Sydney to Vancouver, via Suva (Fiji Islands) and Honolulu, the length of the total line being 6,985 miles, and the distances between intermediate points: Sydney to Suva, 1,770 miles. Suva to Honolulu, 2,780 miles, and Honolulu to Vancouver, 2,435 miles.

The passenger rate (saloon) from Sydney to Vancouver, or vice versa is £40 (\$194.66), and freight rate £2 (\$9.73) per ton. The rate between intermediate points is not quoted.

Although there exists no regular line of sailing vessels between America and Australia, the arrivals of such are numerous, the greater part of the merchandise from New York to Melbourne coming in that way.

EUROPEAN LINES.

Melbourne is connected with Great Britain and Europe by many lines of steam and sailing vessels, mail steamers leaving the port for London regularly every week.

The following are the most important companies whose vessels are engaged in the European-Australian trade:

Peninsular and Oriental Steam Navigation Company.—The history of this company practically dates from 1837, when Messrs. Wilcox and Anderson, in conjunction with Capt. Richard Bourne, founded the Peninsular Company, which, three years later, became the Peninsular and Oriental Steam Navigation Company. The strength of the portion of the company's fleet which is engaged in the Australian service is shown by the following table:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Himalaya	7,000	10,000	Carthage	5,013	5,000
Australia	7,000	10,000	Rome	5,011	5,000
Arcadia	6,362	7,000	Valetta	4,919	5,000
Oceana	6,362	7,000	Massilla	4,918	5,000
Victoria	6,288	7,000	Parramatta	4,771	4,500
Britannia	6,287	7,000	Ballarat	4,748	4,500

Passengers for Australia by these steamers may either make the through voyage from London to Adelaide, Melbourne, or Sydney, as the case may be, or they may cross the English Channel, via Dover and Calais or Folkstone and Boulogne, and join the steamers at Brindisi. There is also a branch service between Venice and Alexandria, touching at Brindisi, in connection with the mail services. The through steamers start every fortnight from the Royal Albert Dock or Tilbury, a special train leaving the Liverpool street station of the Great Eastern Railway to connect with each steamer. From Tilbury the steamer goes to Gibraltar, Malta, Brindisi, and Port Said, the northern entrance to the Suez Canal, arriving there about twelve days after leaving London. The steamer then proceeds by the Suez Canal to Suez, then through the Red Sea to Aden, then to Colombo, Ceylon, and next to Australia, stopping at King George Sound (Albany), Adelaide, Melbourne, and Sydney, which is the terminus of the line.

The total length of the line, London to Sydney, via the above ports, is 12,500 miles, and the distances between ports are:

From—	To—	Miles.
London	Plymouth	295
Plymouth	Gibraltar	1,054
Gibraltar	Malta	981
Malta	Brindisi	360
Brindisi	Port Said	930
Port Said	Aden	1,895
Aden	Colombo	2,093
Colombo	King George Sound	8,390
King George Sound	Adelaide	1,007
Adelaide	Melbourne	485
Melbourne	Sydney	560

The passenger rate (saloon) from London to Melbourne is from £60 (\$291.99) to £70 (\$340.65), and between ports as follows:

From—	To—	Fare.
London	Gibraltar	\$48.66
Gibraltar	Malta	38.93
Malta	Brindisi	19.46
Brindisi	Port Said	53.53
Port Said	Aden	96.11
Aden	Colombo	81.51
Colombo	King George Sound	111.92
King George Sound	Adelaide	34.06
Adelaide	Melbourne	17.02
Melbourne	Sydney	17.02

Freight rates are liable to considerable fluctuation, and can only be named at the port of shipment and from steamer to steamer.

As indicative of the confidence the company has in the future development of the Australian trade, it may be mentioned that there is now building for this line a magnificent vessel of the highest class, and specially adapted for the requirements of the trade in which she is to be engaged. Her name is *Caledonia*, her tonnage 7,500, and she will have engines of 12,000 horsepower.

Orient Steam Navigation Company.—Early in 1877, the London firm of Anderson, Anderson & Co., perceiving that the time had come for founding a first-class steam line to Australia direct, commenced running with chartered steamers, and on the 7th of March, 1878, the *Garonne* left London flying the new flag of the Orient Steam Navigation Company, which had been formed by the united efforts of the firm above named and of F. Green & Co., also of London, who had joined them for the purpose. At first, only a monthly service was intended, but very soon it became plain that the traffic demanded fortnightly sailings, and to-day the service consists of the following splendidly equipped vessels:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Ormuz	6,031	8,500	Ophir	6,910	9,500
Oratava	5,552	7,000	Orizaba	6,077	7,000
Oruba	5,552	7,000	Oroya	6,057	7,000
Anstral	5,524	7,000	Orient	5,385	6,000
Cuzco	3,918	4,000			

The route is the same as that pursued by the Peninsular and Oriental Company, with the exception that the Orient steamers call at Naples as well as at the other ports.

The service is a fortnightly one, and, with the Peninsular and Oriental Company, carries the British mails.

Gulf Line.—These steamers are owned by the Greenock Steamship Company, Limited, and the Gulf Line Association, Limited, Greenock, Scotland. Their first steamer sailed for Australia in 1880. The service is a regular one from London to Adelaide, Melbourne, and Sydney, via Cape of Good Hope, every month, and from Glasgow and Liverpool to Adelaide, Melbourne, Sydney, and Brisbane, also via Cape of Good Hope, every six weeks.

There are sixteen steamers, as shown below, having an average of 400 horsepower and attaining a speed of 12 knots:

Name.	Tonnage.	Name.	Tonnage.
Gulf of Genoa.....	3,448	Gulf of Bothnia.....	3,448
Gulf of Ancud.....	2,716	Gulf of Venice.....	3,121
Gulf of Corcovado.....	2,361	Gulf of Guinea.....	2,436
Gulf of Akaba.....	2,041	Gulf of Suez.....	1,535
Gulf of Mexico.....	3,088	Gulf of Trinidad.....	2,362
Gulf of Martaban.....	2,447	Gulf of Florida.....	2,996
Gulf of Lyons.....	2,661	Gulf of Siam.....	3,455
Gulf of Papua.....	1,971	Gulf of Taranto.....	3,500

The first-class fare from London to Melbourne is £45 (\$218.99). Rates of freight on cargo from England to Australia vary from \$4.86 to \$7.29 per ton, and from Australia to England and the Continent from \$8.51 to \$14.59 per ton.

Lund's Line.—A monthly service, the terminal points of the line being London and Sydney and the intermediate points Adelaide and Melbourne. It consists of the following steamers:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Hubbuck.....	1,776	400	Wilcannia.....	1,750	450
Warrnambool.....	2,213	500	Bungaree.....	1,859	450
Culgoa.....	2,135	450	Yarrawonga.....	2,555	500
Woolloomooloo.....	2,221	500	Warrigal.....	2,778	500
Echuca.....	1,736	400			

Norddeutscher Lloyd.—This company was established at Bremen in 1856 for the purpose of running a line of steamers between Bremen, Hull, and London. Subsequently, lines were formed between Bremen and New York, the West Indies, and Brazil, and in 1885 the company received a subsidy from the German Government for the purpose of encouraging German commerce with Australia and eastern Asia. In 1886 the two last-named lines were opened.

The Australian service consists of the following steamers:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Kaiser Wilhelm II.....	7,000	6,500	Hapsburg.....	3,094	2,300
Elbe.....	4,510	5,600	Hohenzollern.....	3,092	2,300
Oldenburg.....	5,300	3,200	Braunschweig.....	3,079	2,200
Karlsruhe.....	5,347	3,300			

The terminal points of the line are Bremen and Sydney, and its total length is 13,105 miles. Leaving Sydney, the steamer proceeds to Melbourne, then Adelaide, Colombo, Aden, Suez, Port Said, Naples, Genoa, Southampton, Antwerp, and finally Bremen. The service is a monthly one, and the passenger rate (saloon) from Melbourne to Bremen is £60 (\$291.99). No quotation is given as to freight.

Messageries Maritimes.—This company was created with the object of running subsidized postal services in place of the Government steamers.

The pioneer steamer of the Messageries Maritimes Company on the Australian line, the *Natal*, left Marseilles on the 23d of November, 1882, and reached Sydney on the 7th of January, 1883. From that time the service has continued without any interruption in a progressive manner.

The Australian service is from Marseilles to Noumea (New Caledonia), and consists of the following steamers:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Armand-Behic.....	6,548	7,000	Ville de la Clotat.....	6,542	7,000
Polynesien.....	6,562	7,000	Tanais.....	1,824	1,600
Australien.....	6,653	7,000			

The service is a monthly one, and the total length of the line is 11,354 miles. Leaving Noumea (New Caledonia), the terminus of the line, the steamer calls at Sydney, Melbourne, Adelaide, King George Sound, Mahe, Aden, Suez, Port Said, and Marseilles, and vice versa. The distances between ports are:

From—	To—	Miles.
Noumea.....	Sydney.....	1,058
Sydney.....	Melbourne.....	576
Melbourne.....	Adelaide.....	480
Adelaide.....	King George Sound.....	1,025
King George Sound.....	Mahe.....	3,922
Mahe.....	Aden.....	1,395
Aden.....	Suez.....	1,308
Suez.....	Port Said.....	87
Port Said.....	Marseilles.....	1,503

Passenger rate (saloon), £65 (\$316.32).

The line is under contract with the French Government to carry mails.

Anglo-Australasian Steam Navigation Company, Limited.—A monthly line of steamers from London to Australia, via Cape of Good Hope,

with terminus at Sydney. The intermediate ports are Adelaide and Melbourne.

The service consists of the following vessels:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Port Adelaide.....	2,751	400	Port Hunter.....	4,670	65
Port Albert.....	4,140	600	Port Melbourne.....	4,670	65
Port Caroline.....	3,528	600	Port Phillip.....	2,671	37
Port Chalmers.....	4,154	600	Port Pirie.....	3,109	45
Port Denison.....	3,506	650	Port Victor.....	2,783	40
Port Fairy.....	2,539	650	Hankow.....	3,594	50

China Navigation Company, Limited.—A monthly line of steamers from Melbourne to Hongkong, the intermediate ports being Sydney, Brisbane, Townsville, Cooktown, Thursday Island, and Port Darwin. The passenger rate (saloon) from Melbourne to Hongkong is £34 10s. (\$167.89); freight rate, 35s. (\$8.51). No quotation is given for intermediate ports.

The service consists of the following vessels:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Changsha.....	2,300	1,800	Taiyuan.....	2,300	1,800
Chingtu.....	2,300	1,800	Tsian.....	2,300	1,800

Eastern and Australian Steamship Company.—A monthly line, consisting of the following vessels:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Catterthun.....	2,000	250	Airlie.....	2,000	340
Taanadice.....	2,000	300	Cutherie.....	2,000	300
Menmuir.....	2,000	240			

The route is via Sydney, and the terminal points of the line are Melbourne and Hongkong. The passenger rate (saloon) is £33 (\$160.59), and the freight rate 40s. (\$9.73) per ton.

Australian and India Line of Steamships.—An old-established line of steamers from Melbourne to Calcutta. The service is a monthly one, and the total length of the line is 6,000 miles. The passenger rate (saloon) from Melbourne to Calcutta is £25 (\$121.66), and the freight rate 30s. (\$7.29) per ton.

The service consists of the following vessels:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Daraus.....	3,283	280	Clitus.....	2,435	200
Argus.....	2,792	400	Bucephalus.....	1,818	147

The foregoing steamship lines are the most important connecting Melbourne with foreign ports, there being some smaller companies whose vessels run very irregularly, and are therefore not mentioned.

COASTWISE LINES.

The steam service between Melbourne and Sydney is practically continuous by the vessels of the Australasian United Steam Navigation Company (Huddart, Parker & Co.), the Adelaide Steamship Company (Howard Smith & Sons), and by the vessels of the Peninsular and Oriental Steam Navigation Company and other companies making Melbourne a port of call en route to and from Sydney. There is communication with Newcastle, New South Wales, by the steamers of Huddart, Parker & Co. and Howard Smith & Sons; with South and West Australia four or five times a week by the vessels of the Adelaide Steamship Company, the Australasian United Steam Navigation Company, and Huddart, Parker & Co.; with Brisbane and other Queensland ports by the vessels of the same companies and Howard Smith & Sons; with New Zealand once a week by the steamers of the Union Steamship Company, and with Tasmania by those of the Union Steamship Company and Huddart, Parker & Co. With the port of Geelong, 50 miles from Melbourne, a daily service of three vessels is maintained, and for Warrnambool, Port Fairy, and Portland, on the Victorian coast, vessels leave Melbourne three times a week.

The distances from Melbourne to the principal ports of Australasia are:

To—	Miles.	To—	Miles.	To—	Miles.
Sydney	560	Bowen	1,719	Fremantle	1,910
Newcastle	634	Townsville	1,822	Geraldton	2,242
Brisbane	1,074	Cooktown	2,028	Hobart	451
Rockampton	1,424	Adelaide	508	Wellington	1,479
Mackay	1,614	Albany	1,526	Suva	2,227

The passenger rate (first class) between Melbourne and the ports mentioned are:

To—	Fare.		To—	Fare.			
	Sterling.	United States equivalent.		Sterling.	United States equivalent.		
Sydney	£ 2	s. 5	\$10.04	Townsville	£ 9	s. 10	\$46.22
Newcastle	2	5	10.94	Cooktown	12	0	54.39
Brisbane	4	10	21.89	Adelaide	2	5	10.94
Rockampton	7	10	36.49	Fremantle	6	0	29.19
Mackay	8	10	41.36	Hobart	2	10	12.16
Bowen	9	10	46.22	Wellington	8	10	41.36

The rates of freight fluctuate greatly, and exact figures can not therefore be given. They are, approximately, from Melbourne, as follows:

To—	Rate.		To—	Rate.	
	Sterling.	United States equivalent.		Sterling.	United States equivalent.
	<i>Shillings.</i>			<i>Shillings.</i>	
Sydney	5	\$1. 21	Cooktown.....	32	\$7. 78
Newcastle	5	1. 21	Adelaide.....	8	1. 94
Brisbane	10	2. 43	Fremantle.....	18	4. 38
Rockampton	20	4. 86	Hobart.....	10	2. 43
Mackay	23	5. 59	Wellington.....	15	3. 65
Bowen	30	7. 29	Suva.....	30	7. 29
Townsville.....	25	6. 04			

The following is a list of the vessels engaged in the intercolonial and coastwise trade of Australia. These vessels are owned by the four companies of Huddart, Parker & Co., William Howard Smith & Sons, the Union Steamship Company, and the Australasian United Steam Navigation Company, and are in first-class condition.

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Adelaide	1, 711	267	Manapouri	1, 783	2, 050
Albany	878	120	Morston	581	250
Aramoo	2, 114	3, 000	Mawhera	554	500
Arawatta	2, 114	3, 000	Maninapus	458	500
Arawata	1, 068	1, 250	Maranoo	1, 505	2, 400
Age	2, 224	200	Nemezis	1, 393	120
Australia	459	370	Ouraka	2, 637	220
Brunner	540	700	Otway	1, 757	93
Buninyong	2, 070	300	Oonah	1, 583	2, 000
Barrabool	842	140	Ovalau	1, 229	1, 000
Burwah	862	200	Oahu	740	550
Barrier	2, 036	200	Omapero	601	500
Builla	1, 725	250	Orowaiti	458	350
Burrumbeet	2, 420	265	Oreti	219	200
Bulimba	2, 513	2, 000	Pukaki	1, 444	700
Baroo	1, 605	2, 500	Pateena	1, 212	2, 000
Birkgate	1, 458	1, 300	Pohorus	1, 175	600
Clitra	2, 000	2, 000	Penguin	824	850
City of Melbourne	838	900	Peregrine	1, 060	450
Croydon	357	400	Perth	499	70
Coogee	1, 000	250	Palmer	267	450
Courier	728	300	Quiraing	1, 166	1, 100
Colac	1, 480	140	Rotokina	2, 064	1, 000
Corinna	1, 279	1, 200	Rotomahana	1, 727	2, 980
Dingadee	640	550	Ringarooma	1, 096	1, 250
Derwent	478	98	Rotorua	926	1, 900
Despatch	237	90	Rosamond	721	450
Eurimbla	1, 055	1, 000	Rodondo	1, 119	150
Elamang	1, 000	900	Ranelagh	836	1, 000
Elingamite	2, 585	250	Rockton	2, 000	2, 000
Excelsior	340	160	Sophia Ann	400	35
Emu	616	95	South Australia	716	436
Era	2, 379	250	Southern Cross	282	250
Edna	380	85	Tasmania	2, 252	250
Ferret	445	90	Tambo	752	250
Flinders	521	90	Time	2, 575	250
Flora	1, 273	1, 000	Talune	2, 020	1, 000
Franklin	730	284	Tarawera	2, 003	1, 750
Fitzroy	870	1, 000	Taieri	1, 668	750
Gunga	1, 257	800	Te Anau	1, 652	1, 500
Gabo	2, 060	300	Taviuni	1, 465	1, 000
Grafton	554	500	Takapuna	930	2, 000
Glanworth	877	1, 000	Taupo	737	550
Hauroto	1, 988	1, 250	Upolu	1, 441	1, 000
Hunter	310	120	Victoria	1, 250	600
Heke	640	550	Victorian	718	436
Innamincka	2, 501	460	Waihora	2, 003	1, 750
Janet Nicoll	779	500	Wakatipu	1, 945	1, 250
Katoomba	1, 000	900	Wairarapa	1, 786	2, 050
Konoowarra	1, 273	130	Wainui	640	755
Kawatiri	453	250	Wareatea	480	350
Laura	1, 186	200	Wendouree	1, 640	250
Lubra	321	60	Wadonga	2, 500	3, 300
Lindus	1, 679	160	Waroonga	2, 513	2, 000
Monowai	3, 433	2, 800	Warrego	1, 552	2, 300
Mararoa	2, 598	3, 250	Yarralla	482	300

RIVERS.

The rivers of Victoria, with the exception of the Yarra from its mouth to the city of Melbourne, are very shallow and allow of navigation by vessels only of very light draft.

The intercolonial and coastwise steamers enter the Yarra and berth at the city wharves, a distance of 5 miles from the entrance. Foreign steamers usually land their passengers and cargo at the Williamstown and Port Melbourne piers, whence Melbourne is reached by rail.

The Murray River, which divides Victoria from New South Wales, is navigable by small vessels from Albury, in Victoria, to Goolwa, in South Australia, a distance of 1,468 miles. The most important places on the river between those points are Corowa, Cobram, Moama, Echuca, Ferricoota, Swan Hill, Euston, Mildura, Wentworth, Gal Gal, Morgan, Murray Bridge, and Wellington.

The following are the largest vessels trading on the river:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Bantam	47	13	Resolute	39	9
Corrong	73	46	Rodney	133	13
Ellen	161	27	Rothbury	48	10
Gem	183	40	Success	96	7
Pearl	188	29	Trafalgar	158	13

These vessels carry passengers and cargo, the latter in considerable quantities, chiefly wool, wheat, and fruit. No quotation can be obtained in Melbourne as to rates for passengers and freight.

The Glenelg and Goulburn rivers are each navigable for about 80 miles, chiefly by pleasure boats.

RAILWAYS.

The length of line open for traffic in the Colony of Victoria at the close of 1893 was 2,975 miles, made up as follows: Northern System, 836½; Western System, 1,018½; Northeastern System, 603¾; Eastern System, 500; South Suburban, 16½.

The number of passengers carried during the year was 58,445,075, and the tonnage of goods and live stock 3,386,888.

There are but two through lines of traffic from Melbourne, the Northeastern and Western lines. The Northeastern line, from Melbourne to Sydney, New South Wales, crosses the border at Albury, where, owing to the different gauges of the lines of the two colonies, cars must be changed. The distance from Melbourne to Albury is 191 miles, and from Albury to Sydney 386 miles, the total distance from Melbourne to Sydney being 577 miles. The track is a double one.

Trains leave Melbourne for Sydney twice a day, morning and evening, and the principal towns on the line to Albury are Wallan,

Seymour, Benalla, Wangaratta, Springhurst, and Wadonga. The distances between these places are:

From—	To—	Miles.	From—	To—	Miles.
Melbourne	Wallan	30	Wangaratta	Springhurst	16
Wallan	Seymour	31	Springhurst	Wadonga	27
Seymour	Benalla	60	Wadonga	Albury	4
Benalla	Wangaratta	25			

The first-class fare from Melbourne to Sydney is £4 1s. (\$19.70), and 12s. 6d. (\$3.04) extra if a sleeping berth is required. From Melbourne to Albury the fare is £1 14s. (\$8.26).

The Western line, from Melbourne to Adelaide, is 483 miles in length, and, as in the case of the Northeastern line, the difference of gauge necessitates a change of cars at Serviceton, on the border of Victoria and South Australia and 287 miles distant from Melbourne. This line has a double track.

The principal towns between Melbourne and Serviceton are Bacchus Marsh, Ballarat, Ararat, Stawell, Murtoa, Horsham, and Dimboola. The distances between these are:

From—	To—	Miles.	From—	To—	Miles.
Melbourne	Bacchus Marsh	31	Stawell	Murtoa	36
Bacchus Marsh	Ballarat	43	Murtoa	Horsham	18
Ballarat	Ararat	57	Horsham	Dimboola	21
Ararat	Stawell	19	Dimboola	Serviceton	62

The distance from Serviceton to Adelaide is 196 miles.

The passenger rate from Melbourne to Adelaide is £3 15s. (\$18.24), and from Melbourne to Serviceton £2 11s. 4d. (\$12.48).

The rate of freight on the Victorian railways is 1½d. (3 cents) per ton per mile.

CANALS—HIGHWAYS.

There are no canals or highways in Victoria upon which any traffic worth mentioning is carried, the railways transporting all inland traffic.

DANIEL W. MARATTA,
Consul-General.

MELBOURNE, *January 1, 1894.*

NEW ZEALAND.

OCEAN LINES.

New Zealand Shipping Company—The head office of this company is in London, the registered office at Christchurch, New Zealand. London is the port of departure on the outward voyage, and either Wellington or Lyttleton on the return voyage. Vessels on the outward voyages, leaving London, call at the following places en route: Gravesend, Plymouth, Teneriffe, Cape Town, Hobart, Auckland, Wellington, Lyttleton, Port Chalmers, and Bluff.

The distance from London to Auckland on the outward voyage is 13,420 miles, divided as follows:

From—	To—	Miles.	From—	To—	Miles.
London	Gravesend	14	Teneriffe	Cape Town	4,450
Gravesend	Plymouth	296	Cape Town	Hobart	5,720
Plymouth	Teneriffe	1,420	Hobart	Auckland	1,520

Homeward-bound vessels from New Zealand to London call at Rio de Janeiro, Teneriffe, Plymouth, and Gravesend. The voyage by this route occupies two days less than the outward voyage, the distance from Auckland to London being 12,070 miles, viz:

From—	To—	Miles.	From—	To—	Miles.
Auckland	Rio de Janeiro	6,820	Plymouth	Gravesend	296
Rio de Janeiro	Teneriffe	3,520	Gravesend	London	14
Teneriffe	Plymouth	1,420			

The steamers of this company are considered first class, and are equipped with all modern improvements known to marine architecture. Experienced surgeons are always on board. Passenger accommodation is excellent, the cabins being lighted with electricity and heated by steam.

The following are the names of the company's steamers, with tonnage, horsepower, and first-class passenger capacity:

Name.	Tonnage.	Horsepower.	Passenger capacity.
Tongariro	4,163	3,600	64
Aorangi	4,163	3,600	61
Ruapehu	4,168	3,600	64
Kaikoura	4,474	4,000	76
Rimutaka	4,473	4,000	76
Ruahine	6,127	5,000	74

These are considered first-class passenger vessels, while the following-named vessels are regarded more as cargo than passenger steamers:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Tekoa.....	4,050	1,600	Duke of Westminster.....	3,726	2,400
Otarana.....	3,808	1,600	Duke of Buckingham.....	3,123	2,344
Waikato.....	4,766	1,600	Duke of Argyll.....	3,159	2,399
Duke of Sutherland.....	3,271	2,000	Duke of Devonshire.....	3,100	2,300

In addition to the foregoing, the company owns a fleet of ten sailing vessels, with a gross tonnage of 10,452.

The annexed table will show the frequency and regularity of the communication of this line between New Zealand, England, and the various intermediate ports already mentioned:

Sailing dates during 1894.

Outward.						Homeward.				
Leaves—		Due at—				Leaves New Zealand.	Due at—			
London.	Plym-outh.	Tene-riffe.	Cape Town.	Hobart.	New Zealand.		Rio de Janeiro.	Tene-riffe.	Plym-outh.	London.
Jan. 11	Jan. 13	Jan. 18	Feb. 3	Feb. 22	Feb. 26	Jan. 18	Feb. 10	Feb. 24	Mar. 1	Mar. 2
Feb. 8	Feb. 10	Feb. 15	Mar. 3	Mar. 22	Mar. 26	Feb. 15	Mar. 10	Mar. 24	Mar. 29	Mar. 30
Mar. 8	Mar. 10	Mar. 15	Mar. 31	Apr. 19	Apr. 23	Mar. 22	Apr. 14	Apr. 28	May 3	May 4
Apr. 5	Apr. 7	Apr. 12	Apr. 28	May 17	May 21	Apr. 19	May 12	May 26	May 31	June 1
May 3	May 5	May 10	May 26	June 14	June 18	May 17	June 9	June 23	June 28	June 29
May 31	June 2	June 7	June 23	July 12	July 16	June 14	July 7	July 21	July 26	July 27
June 28	June 30	July 5	July 21	Aug. 9	Aug. 13	July 12	Aug. 4	Aug. 18	Aug. 23	Aug. 24
July 26	July 28	Aug. 2	Aug. 18	Sept. 6	Sept. 10	Aug. 9	Sept. 1	Sept. 15	Sept. 20	Sept. 21
Aug. 23	Aug. 25	Aug. 30	Sept. 15	Oct. 4	Oct. 8	Sept. 6	Sept. 29	Oct. 13	Oct. 18	Oct. 19
Sept. 20	Sept. 22	Sept. 27	Oct. 13	Nov. 1	Nov. 5	Oct. 4	Oct. 27	Nov. 10	Nov. 15	Nov. 16
Oct. 18	Oct. 20	Oct. 25	Nov. 10	Nov. 29	Dec. 3	Nov. 1	Nov. 24	Dec. 8	Dec. 13	Dec. 14
								1895.	1895.	1895.
Nov. 15	Nov. 17	Nov. 22	Dec. 8	Dec. 27	Dec. 31	Nov. 29	Dec. 22	Jan. 5	Jan. 10	Jan. 11
			1895.	1895.	1895.		1895.			
Dec. 13	Dec. 15	Dec. 20	Jan. 5	Jan. 24	Jan. 28	Dec. 27	Jan. 19	Feb. 2	Feb. 7	Feb. 8

First-class saloon passage from London to any of the principal ports in New Zealand is £60 to £70 (\$293.45 to \$342.38), according to accommodation. I have not been able to ascertain the cost of transportation between intermediate points except from Auckland to Rio de Janeiro, which is \$218.99.

The following tabulated statements will show the freight charges from London to New Zealand and vice versa. I wish to state, however, that these tables are not to be depended upon, for the reason that there is considerable competition for freight both ways, with the natural result that rates fluctuate almost every week.

Freight rates.

LONDON TO NEW ZEALAND.

Articles.	To	To
	Colony.	London.
Pig iron..... per ton weight..	<i>s. d.</i>	<i>s. d.</i>
Bar iron, bundles, bars, rods, sheet iron, pig lead, sash weights, cable chain, per ton weight..	30 0	25 0
Galvanized iron, sheet lead, zinc in casks, tubes, bolts in casks, chain in casks, tool steel, wire, wire rope, hoop iron, nails, grindstones, shot, caustic soda, white lead, paints, tin and tin plates, copper and yellow metal, anchors, whitening, and chalk..... per ton weight..	32 6	27 6
Camp ovens, boilers, and pots (not singly)..... do..	65 0	60 0
Salt..... do..	32 6	27 6
Slates and bricks..... do..	35 0	30 0
Sugar in bags..... do..	40 0	35 0
Rice in bags..... do..	50 0	45 0
Coffee in casks..... do..	55 0	50 0
Grease and palm oil..... do..	65 0	60 0
Arsenic..... do..	45 0	40 0
Superphosphates..... do..	32 6	27 6
Soda crystals and lump silicate of soda..... do..	50 0	45 0
Liquid silicate in drums..... do..	40 0	35 0
Bleaching powder, disinfecting powder, chloride of lime, per ton weight or measurement.....	50 0	45 0
Glucose and saccharine..... per ton weight or measurement..	35 0	30 0
Acids, naphtha, and other deck cargo..... do..	110 0	100 0
Cartridges, loaded..... do..	110 0	100 0
Barbed wire..... do..	35 0	30 0
Machinery and agricultural implements, ordinary packages, per ton weight or measurement.....	35 0	30 0
Machinery and agricultural implements, over 2 tons and not exceeding 3 tons, per ton weight or measurement.....	45 0	40 0
Thrashing machines, engines, heavy castings, and pieces of machinery, over 3 tons and not exceeding 4 tons..... per ton weight or measurement..	55 0	50 0
In crates: Earthenware, bottles, hollow ware, globes, and chimneys, per ton measurement.....	35 0	30 0
In bundles: Tubs, pails, buckets, sieves, spades and shovels, brooms and broom handles, oakum, cotton waste, hocks, stoves, bellows..... per ton measurement..	35 0	30 0
Rough furniture, rough toys, bales corks, rope, window glass, wire netting, per ton measurement.....	35 0	30 0
Hardware, bedsteads, safes, brushware, paints (packed) and dry colors, bales paper, Dundee bales, matting, floor cloth, oilman stores, blue stone, sulphur, tar, pitch, rosin, saltpeter, corn sacks, woolpacks, nuts in barrels, fruits, vinegar in cases or casks, mineral waters, cartridge cases, ranges in cases, loaf sugar, frames felt..... per ton measurement..	35 0	30 0
Multi. carpets, blankets, felt and straw hats, seeds, twine, varnish in cases, sheep nets, wines, cordials, and spirits in cases or casks, coffee, cocoa, chocolate, bicycles, tools, grindery, cases corks..... per ton measurement..	42 6	37 6
Drapery, tea, hops, saddlery, books, drugs, paper and stationery in cases, boots and shoes, confectionery, silk hats, musical instruments, sewing machines, plate glass, and measurement goods not otherwise enumerated, per ton measurement.....	45 0	40 0
Soda ash, potash..... per ton measurement..	40 0	35 0
Deals and flooring boards..... do..	30 0	25 0
Fuse, percussion caps, safety cartridges, and oilskins..... do..	60 0	55 0
Fireworks..... do..	70 0	65 0
Matches and vestas..... do..	35 0	30 0
Plants on deck..... do..	70 0	65 0
Wines and brandies in cases or casks, being transshipments from Bordeaux and Charente..... per ton measurement..	37 6	32 6
Sheep wash:		
Powder..... per ton measurement..	35 0	30 0
Liquid in drums or casks..... per gallon..	0 5	0 4
Oil in drums, tins, or casks..... do..	0 4½	0 3½
Varnish in drums or tins..... do..	0 6	0 5
Turpentine, paraffin, methylated spirits, and liquid disinfectants..... do..	0 6	0 5
Beer in bulk..... per tun of 4 hogsheads or of 6 barrels..	60 0	55 0
Bottled beer:		
In cases..... per dozen..	1 1	0 11
In casks..... do..	1 5	1 2
Gunpowder:		
Loose..... per barrel..	10 6	9 6
Canister..... do..	14 6	12 6
Cement..... do..	4 0	4 0
Quicksilver..... per bottle..	5 0	4 6

NOTE.—All goods 10 per cent primage.

Freight rates—Continued.

NEW ZEALAND TO LONDON.

Articles.	Mail	Cargo	Sailer:
	steamer.	steamer.	
	s. d.	s. d.	s. d.
<i>General cargo.</i>			
Wool: ¹			
Greasy, dumped..... per pound..	0 ½	0 ½	0 ½
Slips, dumped..... do.....	0 ½	0 ½	0 ½
Washed, dumped..... do.....	0 ½	0 ½	0 ½
Sheepskins, ¹ dumped..... do.....	0 ½	0 ½	0 ½
Rabbit skins, box pressed to 25 feet, or fluffies, dumped ² to 25 feet, per pound.....	0 ½	0 ½	0 ½
Hops:			
Dumped..... per pound..	0 ½	0 ½	
Undumped..... do.....	0 1	0 1	
Rags..... do.....		0 ½	
Flax, dumped..... per ton weight..	100 0	85 0	75 0
Tallow and pelts..... do.....	55 0	45 0	40 0
Leather basils, etc..... do.....	60 0	60 0	50 0
Grass seed..... do.....	90 0	80 0	70 0
Bones and horns:			
With liberty to shoot..... do.....			25 0
In bags..... do.....			35 0
Salted hides..... do.....			30 0
Waste paper..... do.....	70 0	60 0	50 0
Manganese, metal ore, quartz, etc..... do.....	20 0	20 0	20 0
Fine measurement cargo..... per ton measurement..	50 0	50 0	46 0
Preserved meats and rough measurement cargo..... do.....	40 0	40 0	35 0
Shells..... do.....	50 0	45 0	35 0
Gold bullion..... per ounce.....	0 4	0 4	
<i>In cool chamber.</i>			
Butter: ³			
In kegs..... per pound..	0 ½	0 ½	
In boxes..... do.....	0 ½	0 ½	
Cheese ³ do.....	0 0	0 0	
Fruit, prepaid..... per case of 2 feet.....	4 0	4 0	
<i>In freezing chamber.</i>			
Butter, frozen before shipment..... per pound..	0 ½	0 ½	
Butter, frozen on board..... do.....	0 1	0 1	
Hares..... each.....	0 7		

¹ Wool and sheepskins, undumped, *jd.* extra per pound.

² Fluffies, undumped, *jd.* extra per pound.

³ Freight payable in colony or London at shipper's option.

The through rate of freight on wool, etc., to Boston or New York is *3d.* additional to London rates, and to Antwerp, Hamburg, Leghorn, Naples, Genoa, Palermo, Yorkshire, *jd.* additional.

For pelts in casks, sausage skins in tierces or casks, and catgut in cases, the rate to New York or Boston is 20s. additional to London rates.

Primage, steamers, 10 per cent; sailers, 5 per cent.

All weights and measurements gross.

For carriage of gold coin and silver-lead bullion the rate is one-half of 1 per cent on declared value, and for valuables *½* per cent, without primage.

The rates on gum and copra are as arranged at Auckland.

The rate on rabbits is as arranged.

It is impossible to obtain any information of a reliable character as to the freight charges between intermediate ports. The competition is keen, and the several agencies appear to be afraid to disclose too much lest the others may secure some undue advantage in consequence. I can only learn in a general way that there is a slight increase in both freight and passenger rates for intermediate ports as compared with through traffic.

First-saloon passengers are allowed 40 cubic feet of baggage room for each adult. Packages intended for the cabin should not exceed 2 feet 6 inches by 1 foot 6 inches by 1 foot 2 inches. Baggage "wanted on the voyage" can be got at once a week.

Shaw, Savill & Albion Company, Limited.—The head office of this company is at No. 34 Leadenhall street, London; J. H. Potter, manager. Passenger steamers sail monthly from London for New Zealand, calling at Plymouth, Teneriffe, Cape Town, and Hobart. The steamers sail monthly from New Zealand, calling at Rio de Janeiro, Teneriffe, Plymouth, and London.

The distances by this route are:

Outward.			Homeward.		
From—	To—	Miles.	From—	To—	Miles.
Graveyard	Plymouth	291	Wellington	Cape Horn	4,400
Plymouth	Teneriffe	1,415	Cape Horn	Rio de Janeiro	2,350
Teneriffe	Cape Town	4,585	Rio de Janeiro	Teneriffe	3,490
Cape Town	Hobart	5,660	Teneriffe	Plymouth	1,415
Hobart	Wellington	1,300	Plymouth	Gravesend	291
Total		13,251	Total		11,946

The vessels of this company are of modern build and are well maintained in every respect. They are fitted with electric lights, electric bells, pianofortes, libraries, refrigerators, bathrooms, heating appliances, etc.

The following are the names, tonnage, horsepower, and lengths of the vessels in this fleet:

Name.	Tonnage.	Horse-power.	Length.
Gothic	7,730	5,000	<i>Feet.</i> 490
Ionic	4,753	3,000	440
Doric	4,784	3,000	440
Coptic	4,448	3,000	431
Tainui	5,031	5,000	440
Arawa	5,026	5,000	440

The above are used as passenger, mail, and cargo boats, while the following are used altogether as cargo boats:

Name.	Tonnage.	Name.	Tonnage.
Matatua	3,322	Pangataira	4,045
Pakeha	4,331	Maori	5,200
Mamari	3,583		

The carriage of cargo is confined mainly to direct shipments from London to New Zealand and vice versa, although shipments are taken from London to Cape Town and Hobart, and from New Zealand to Rio de Janeiro. I can not obtain the rates of freight between intermediate points, but the through rates are substantially the same as those quoted for the New Zealand Shipping Company. This company has agents at all ports of call and at all places of importance in New Zealand.

Sailing dates during 1894.

OUTWARD.

Steamer.	Leave—		Due at—			Due at New Zealand
	Graves- end.	Plym- outh.	Teneriffe.	Cape Town.	Hobart.	
Arawa.....	Jan. 25	Jan. 27	Feb. 1	Feb. 16	Mar. 7	Mar. 14
Doric.....	Feb. 22	Feb. 24	Mar. 1	Mar. 16	Apr. 4	Apr. 11
Ionic.....	Mar. 22	Mar. 24	Mar. 29	Apr. 13	May 2	May 9
Tainui.....	Apr. 19	Apr. 21	Apr. 26	May 11	May 30	June 6
Gothic.....	May 17	May 19	May 24	June 8	June 27	July 4
Arawa.....	June 14	June 16	June 21	July 6	July 35	Aug. 1
Doric.....	July 12	July 14	July 19	Aug. 3	Aug. 22	Aug. 29
Ionic.....	Aug. 9	Aug. 11	Aug. 16	Aug. 31	Sept. 19	Sept. 26
Tainui.....	Sept. 6	Sept. 8	Sept. 13	Sept. 28	Oct. 17	Oct. 24
Gothic.....	Oct. 4	Oct. 6	Oct. 11	Oct. 26	Nov. 14	Nov. 21
Arawa.....	Nov. 1	Nov. 3	Nov. 8	Nov. 23	Dec. 12	Dec. 19
Doric.....	Nov. 29	Dec. 1	Dec. 6	Dec. 21	Jan. 9	Jan. 16
Ionic.....	Dec. 27	Dec. 29	Jan. 3	Jan. 18	Feb. 6	Feb. 13

HOMEWARD.

Steamer.	Leave New Zealand.	Due at—			
		Rio de Janeiro.	Teneriffe.	Plym- outh.	Graves end
Tainui.....	Feb. 8	Mar. 2	Mar. 15	Mar. 20	Mar. 27
Gothic.....	Mar. 8	Mar. 30	Apr. 12	Apr. 17	Apr. 24
Arawa.....	Apr. 5	Apr. 27	May 10	May 15	May 22
Doric.....	May 3	May 25	June 7	June 12	June 19
Ionic.....	May 31	June 22	July 5	July 10	July 17
Tainui.....	June 28	July 20	Aug. 2	Aug. 7	Aug. 14
Gothic.....	July 26	Aug. 17	Aug. 30	Sept. 4	Sept. 11
Arawa.....	Aug. 23	Sept. 14	Sept. 27	Oct. 2	Oct. 9
Doric.....	Sept. 20	Oct. 12	Oct. 25	Oct. 30	Oct. 37
Ionic.....	Oct. 18	Nov. 9	Nov. 22	Nov. 27	Nov. 34
Tainui.....	Nov. 15	Dec. 7	Dec. 20	Dec. 25	Dec. 32
Gothic.....	Dec. 13	Jan. 4	Jan. 17	Jan. 22	Jan. 29

From London to New Zealand, the passenger rate for best first-class cabins is \$357.68, and \$309.01 for second class. These rates include Adelaide, Melbourne, Sydney, and Hobart. From New Zealand ports to Rio de Janeiro the fare is \$218.99, and from New Zealand to London, via Rio, \$357.68 and \$309.01, according to cabin accommodation.

First-class passengers are allowed 40 cubic feet of space for personal baggage. Packages intended for use in the cabin should be marked "cabin," to avoid inconvenience. Such packages should not exceed 2 feet 6 inches long by 1 foot 6 inches broad and 1 foot 2 inches high.

The passenger accommodations of this line are excellent in every respect.

Shire Line.—The head officers of this line are located at No. 112 Fenchurch street, London, and in Dunedin, New Zealand. Turnbull, Martin & Co. are the managers. The vessels are specially constructed for the carriage of frozen meat between Australia and New Zealand and the United Kingdom. Their sailings are not according to any time-table, but a monthly service homeward is maintained. Outward movements largely depend upon the condition of the freight market for Australasian ports.

The port of departure in New Zealand is usually Port Chalmers; occasionally Wellington. The vessels call at Auckland, Wellington, Lyttelton, and Port Chalmers, in this colony. The outward route is via Cape of Good Hope, calling at Adelaide, Melbourne, Sydney, Brisbane, and Rockhampton, and thence to New Zealand ports, proceeding homeward via Cape Horn, calling at Las Palmas (Canary Islands).

Besides frozen meat, these vessels carry dairy produce, wool, etc., and are fitted with all the latest appliances, including electric lights, etc., and have refrigerating machinery in duplicate on the chemical principle, capable of dealing with 2,400 tons of frozen meat. The vessels are intended more for cargo than passenger traffic, but what passenger accommodation there is is first class.

There are seven vessels in this fleet, viz:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Elderslie.....	2,761	1,800	Perthshire.....	6,640	3,500
Fifeshire.....	3,719	2,400	Buteshire.....	6,640	3,500
Nairnshire.....	3,720	2,500	Banffshire.....	6,800	3,500
Morayshire.....	3,822	2,500			

First-class passenger fare from final port of departure in New Zealand is \$170.32 net. No intermediate or steerage passengers are carried.

The freight rates for general cargo are the same as already quoted. The freight rates for frozen meats per pound, with 10 per cent primage, are: Mutton, 1d. (2 cents); lambs, 1½d.; beef, ¾d.

The other lines mentioned also carry frozen meat at substantially these rates.

The *Perthshire*, *Buteshire*, and *Banffshire* are the largest freight carriers in the Australasian trade, each having 401,000 cubic feet available for cargo and 1,650 tons coal space in addition. The cool chambers have a capacity of 2,350 tons of beef or mutton, and the other space is equivalent to 10,000 bales of wool.

Oceanic Line.—This is an American line, registered at San Francisco. J. D. Spreckles & Co., 732 Market street, San Francisco, are the agents and owners. There are three vessels, one of which is registered in New Zealand. They run between Sydney and San Francisco every four weeks, as follows: From Sydney to Auckland, usually in four and a half days; Auckland to Apia, six days; Apia to Honolulu, seven days; Honolulu to San Francisco, seven days.

The distances sailed are:

From—	To—	Miles.
San Francisco.....	Honolulu.....	2,100
Honolulu.....	Samoa.....	2,000
Samoa.....	Auckland.....	1,950
Auckland.....	Sydney.....	1,282
Total.....		7,332

The Oceanic, or Frisco route, as it is popularly called in these colonies affords every comfort and satisfaction to the traveling public.

It may be observed that the people of Australia, and more especially of New Zealand, are clamorous for faster vessels and more frequent communication with the United States. The growing friendship and ever-increasing commercial intercourse with these colonies demand more generous effort on our part if we would continue to cultivate the kindly sentiment that exists at present and thereby extend our influence and commerce.

The following are the vessels engaged in this service:

Name.	Tonnage.	Home port.
Alameda	3,000	San Francisco
Mariposa	3,000	San Francisco
Monowai	3,500	Dunedin

The *Monowai* is owned by the Union Steamship Company, of Dunedin, New Zealand.

The rate of fare from San Francisco to Sydney is \$200; from San Francisco to Honolulu, \$75, and from Honolulu to Apia (Samoa or Auckland), \$200.

It will be seen from these figures that it costs as much from San Francisco to Samoa as it does to Sydney, although it is 3,232 miles farther to the latter place.

Freight from San Francisco to Auckland or Sydney is charged at the rate of \$16 per ton.

SAILING SHIPS.

There is a line of sailing vessels controlled by Arnold, Cheney & Co. of New York, which leave that port once a month regularly for New Zealand points.

Freight is charged at the rate of \$7 to \$8 per ton, and one hundred to one hundred and ten days is an average voyage from New York to New Zealand.

The foregoing list includes all the foreign lines trading to this country.

COAST LINES.

Union Steamship Company.—This company, with head office at Dunedin, practically controls the entire water carriage of this colony, including intercolonial traffic, there being but one steamer in opposition for both colonial and intercolonial trade, with the exception of a local company at Auckland, with vessels trading to a few ports contiguous to this city.

The total length of the main line is as follows:

From—	To—	Miles.
Auckland.....	Napier.....	375
Napier.....	Wellington.....	203
Wellington.....	Lyttelton.....	175
Lyttelton.....	Port Chalmers.....	190
Port Chalmers.....	Bluff.....	132
Total		1,075

The larger proportion of the Union Company's fleet is in good condition. The best passenger vessels are of comparatively modern architecture and are equipped with electricity and other modern appliances.

The fleet of this company consists of fifty-one steam vessels of all sizes, with a gross registered tonnage of 56,693 and 42,505 horsepower, as follows:

Name.	Tonnage.	Horse-power.	Name.	Tonnage.	Horse-power.
Monowai.....	3,433	2,800	Rotorua.....	926	1,900
Mararoa.....	2,598	3,250	Penguin.....	824	850
Tekapo.....	2,439	1,500	Janet Nicoll.....	779	500
Rotokino.....	2,064	1,000	Ohau.....	740	550
Talune.....	2,020	1,600	Taupo.....	737	550
Tarawera.....	2,003	1,750	Rosamond.....	721	450
Wahora.....	2,003	1,750	Wainui.....	640	755
Hauroto.....	1,988	1,250	Dingadee.....	610	550
Wakatipu.....	1,945	1,250	Omapere.....	601	500
Wairarapa.....	1,786	2,050	Moreton.....	581	250
Manapouri.....	1,783	2,050	Mawhera.....	554	500
Oonah.....	1,757	2,000	Grafton.....	554	500
Rotomahana.....	1,727	2,980	Brunner.....	540	700
Taieri.....	1,668	750	Wareatea.....	480	350
Te Anau.....	1,652	1,500	Australia.....	459	370
Taviuni.....	1,466	1,000	Mahinapua.....	458	500
Pukaki.....	1,444	700	Orowaiti.....	453	350
Corinna.....	1,279	1,200	Kawatiri.....	453	350
Flora.....	1,273	1,000	Southern Cross.....	282	250
Ovalau.....	1,229	1,000	Oreti.....	219	200
Patea.....	1,212	2,000	Moa.....	188	200
Poherua.....	1,175	600	Manawatu.....	183	150
Upou.....	1,141	1,000	Beautiful Star.....	177	150
Arawata.....	1,068	1,250	Maori.....	174	300
Ringarooma.....	1,066	1,250	Waihi.....	92	100
Takapuna.....	930	2,000			

Vessels leave Auckland for the several principal ports at least twice a week regularly; sometimes as many as three vessels are dispatched weekly for southern ports. The communication is frequent, satisfactory, and regular, and the accommodation almost all that could be desired, the fares alone being the principal cause of complaint.

The people of the colony have been murmuring for a long time in consequence of the high rates of fares and freights charged by this company. First-class fare from Auckland to Wellington until recently was \$15.80; Wellington to Lyttelton, \$6.07; Lyttelton to Dunedin, \$6.07, and Dunedin to Bluff, \$4.86.

Freight from Auckland to Wellington, \$3.65 per ton, the same rate being charged from the latter port to Lyttelton and thence to Dunedin and the Bluff. Through rates from Wellington to the Bluff are charged at the rate of \$4.86 per ton, while, so far as I can learn, \$3.65 per ton is the ordinary rate between intermediate points.

INTERCOLONIAL LINES.

Union Steamship Company.—During the summer months this company dispatched one vessel weekly from Auckland to Sydney, or from Wellington to Sydney, and one via southern ports for Melbourne. In winter the service is generally reduced to one vessel fortnightly between Auckland and Sydney and Wellington and Sydney.

Now, thanks to opposition, the service is more frequent and regular and the fares are materially reduced.

First-class fare from Auckland¹ to Sydney is \$24.33; to Hobart, \$48.00; to Melbourne, \$12.16; to Levuka (Fiji), \$41.35; and to Samoa, \$60.

The distances are:

From—	To—	Miles.
Auckland.....	Sydney.....	1200
Bluff.....	Hobart (Tasmania).....	1000
Hobart.....	Melbourne.....	1000
Auckland.....	Levuka (Fiji).....	1000
Suva (Fiji).....	Melbourne.....	1000
Auckland.....	Apia (Samoa).....	1000

The service to Apia is once a month by this line, but the San Francisco mail boats call there both ways, which really makes the service fortnightly.

Huddart, Parker & Co.—The head office of this company is in Melbourne. At present this firm has but one vessel in the colonial and intercolonial trade. The steamship *Tasmania* sails from Sydney every twenty-eight days for Auckland direct, thence to Napier, Wellington, Lyttleton, and Dunedin, returning by the same ports to Sydney. The distance between these ports has been already mentioned. The *Tasmania* is a powerful and splendidly appointed steamer, well ventilated and fitted with every modern appliance, including electricity. She is of 2,252 tons register and 2,500 horsepower.

The freight and passenger rates are the same as the Union Company charge.

It is to this company that the people of the colony are indebted for reduced rates, now fully 50 per cent less than before its service was established.

There are other local steamship companies in the colony, but their routes are confined to the small trading stations along the coast, rivers, and bays.

RAILWAYS.

The railways of this country are owned, controlled, and operated by the Government, with one exception, viz, the Wellington and Manawatu Railway. The fares and freights upon this line are the same as those charged upon the Government road.

¹ The first-class fare by this company's boats has been reduced to \$4.86 from Auckland to Sydney in consequence of opposition.

The railways of the colony are in good condition, the roadbeds being well ballasted and kept in good repair. The rolling stock is also in good order, but the time is exceedingly slow; the average speed for first-class trains does not exceed 16 miles per hour. The longest continuous overland trip by rail is from Christchurch to Invercargill, 369 miles.

The following are the distances and first class fares between the main points reached by rail in the colony:

From—	To—	Miles.	Fare.
Christchurch.....	Invercargill.....	399	\$23. 57
Do.....	Dunedin.....	230	11. 65
Napier.....	Wellington (the capital).....	200	9. 97
New Plymouth.....	do.....	253	11. 96
Auckland.....	Rotonia.....	172	18. 29

The mileage represented embraces only about 1,000 of the nineteen hundred and odd miles operated in the colony, but the remainder is principally made up of branches running into the interior to small towns, coal mines, etc.

The following are the rates of freight charged on the principal products of the country for a given number of miles:

Articles.	Miles.	Rate.
Grain, flour, and potatoes..... per ton..	140	\$3. 22
Do..... do.....	250	3. 79
Sheep or cattle..... per car	140	{ single deck.. } 14. 53
		{ double deck.. } 16. 65
Live stock..... do.....	250	{ 17. 93
		{ 20. 00
Do..... do.....	370	27. 28
Do..... do.....	370	30. 40
Wool, undumped..... per ton..	140	2. 00
Do..... do.....	280	2. 45
Do..... do.....	370	3. 16
Wool, dumped, double bale..... do.....	140	3. 50
Do..... do.....	280	4. 38
Do..... do.....	370	10. 63

The rates for coal are:

Miles.	Inferior.	Superior.	Miles.	Inferior.	Superior.
	<i>Per ton.</i>	<i>Per ton.</i>		<i>Per ton.</i>	<i>Per ton.</i>
50.....	\$1. 31	\$1. 86	200.....	\$3. 10	\$3. 44
100.....	1. 92	2. 47	250.....	3. 44	4. 07
150.....	2. 43	2. 87			

The difference in the freights charged on inferior and superior coal is to afford the poorer quality an opportunity of competing with that which is regarded as superior.

I attach hereto a map of New Zealand, which shows the Government railways open for traffic, the private lines operated in the colony, the coach routes, roads, and tracks, and the steamer routes to and from the various ports.¹

JOHN D. CONNOLLY,

AUCKLAND, June 28, 1894.

Consul.

¹ Map filed in Bureau of Statistics.

POLYNESIA.

NEW CALEDONIA.

OCEAN LINES.

The following were the services between Noumea and Europe and Australia, and on the coasts of this colony, on January 1, 1894 :

(1) *From Marseilles to Noumea, via Australia.*—Four steamships of the Messageries Maritimes, viz, the *Polynésien*, *Australien*, *Armanet-Béhic*, and *Ville de la Ciotat*, all first-class passenger ships of over 4,000 tons.

(2) A steamer of 1,500 tons from Sydney to Fiji, via Noumea monthly.

(3) Two steamers of 600 tons each, employed on the east and west coasts of this colony, belonging to a local syndicate.

The Messageries steamers are mail packets, and receive a subsidy from the French Government. The syndicate steamers are subsidized by the local treasury. The Australian steamers receive no State compensation.

All the interior traffic of the colony is done by the coasting steamers, the main roads inland not being yet completed.

There are no railways in the colony. Rates for first-class passage are: Marseilles to Noumea, 1,875 francs (\$361.87); round-trip ticket, 3,000 francs (\$579); Sydney to Noumea, 250 francs (\$48.25); round-trip ticket, 375 francs (\$72.38).

L. LE MESCAM,
Vice Commercial Agent.

NOUMEA, July 14, 1894.

FIJI ISLANDS.

OCEAN LINES.

United Steam Navigation Company, Limited.—This line has its head office in Brisbane, and a branch office at Sydney, where Burns, Philp & Co., Limited, are agents.

This company runs a branch steam service making fortnightly trips from Sydney to the ports of Suva and Levuka, Fiji Islands, bringing the English and Australian mails, passengers, and freight through to this colony.

The vessels en route for Sydney call at Noumea, but on their return trip from the Fiji Islands to Sydney they only call at Noumea on alternate trips.

Noumea is the capital of New Caledonia and distant from Sydney about 1,060 miles.

There is good anchorage alongside of the wharf at Noumea. Johnston is the agent for the company here.

The New Caledonian group has a population, civil and military, of 6,323; convicts, 11,368; native population, including Loyalty Islands and Isle of Pines, 40,750.

These vessels also call at New Hebrides every second Tuesday, connecting with branch steamer which proceeds around this group monthly. They leave for Sydney every fourth Sunday, and for Suva and Levuka (Fiji) every second Wednesday.

Suva is the capital of the Fiji Islands. The anchorage alongside of the wharf is good. The distance from the port of Noumea is about 760 miles.

The white population of the Fijis is about 2,000, and of natives and others about 120,000.

The company's service from the port of Suva to Noumea and Sydney is alternate Wednesdays, and to Levuka alternate Saturdays. At Levuka the vessels anchor alongside of the wharf. Levuka is distant from Suva about 60 miles, and from Sydney about 1,180 miles. J. C. Smith & Co. are agents at Suva.

There is a service from the port of Levuka to Suva, Noumea, and Sydney every second Wednesday, calling at New Hebrides every fourth Wednesday. J. C. Smith & Co. are agents at Levuka.

The condition of this line is very good, both as to passenger and freight accommodation. The steamers at present running are the *Birksgate* and the *Victoria*; tonnage, 1,458; horsepower, 1,300 and 1,257, respectively. Trips from Sydney to Noumea are made in four to five days; from Noumea to Suva in three and a half days, and from Fiji direct to Sydney in seven days.

Through rates of passage from Sydney to Suva and Levuka: Saloon, £12 10s. (\$60.83); round trip, £20 (\$97.32); steerage, £7 10s. (\$36.50); round trip, £12 (\$58.39). Twenty per cent off these rates to theatrical companies, commercial travelers, clergymen, and Sisters of Mercy. The baggage allowance is: Saloon passenger, 20 cubic feet; steerage passenger, 10 cubic feet. Return tickets are good for six months from date of issue. The company carries first and second class passengers, and the fares include table and attendance, berths, etc.

Through freight rates to Suva and Levuka from Sydney, 30s. (\$7.30) per ton of 40 cubic feet on general cargo.

Passengers are allowed to stop at intermediate ports and continue the voyage by any steamer in which there may be accommodation.

INTERCOLONIAL LINES.

Union Steamship Company of New Zealand, Limited.—The head office of this company is at Dunedin, New Zealand; James Mills, managing director. It runs a fortnightly steam service from Auckland to the ports of Suva and Levuka, making connections at Auckland with the

Oceanic Line of steamers, thus bringing the English and American through mails, passengers, and freights to Fiji. The distance from Auckland to Suva and Levuka is 1,172 miles, and steamers run the same in four and one-half days, the half day being occupied in running from Suva to Levuka.

The steamers in this service are the *Taviuni* and the *Ovalau*, 1,465 and 1,229 tons and 1,000 horsepower each, respectively.

Freight rates to Auckland: Fruit, 20s. (\$4.86); general cargo, 30s. (\$7.30) per ton of 40 cubic feet; coconuts, per bag, containing about 100, 36 cents; peanuts, per bag, 48 cents.

Passenger rates to Auckland: Saloon, £8 10s. (\$41.31); round trip, £15 (\$72.90); steerage, Levuka and Suva to Auckland, £4 10s. (\$21.87); round trip, £8 (\$38.88). Luggage—saloon, 20 cubic feet; steerage, 10 cubic feet.

The steamer *Upolu* also makes a monthly connection with the port of Suva during the cane-crushing season, carrying cargoes of sugar, as well as passengers and mails, to Auckland. She belongs to the Union Steamship Company and runs regular monthly trips from Auckland to the Friendly Islands and Samoa, calling at the islands of Nukualafa, Haapai, and Vavaw.

A steamer runs monthly between Melbourne and Suva and Levuka; distance, 2,227 miles; running time, twenty-five days, allowing seven days' stay in Fiji. The vessel employed in this service is the *Toupo*, of 787 tons and 550 horsepower.

Freight rates: Fruit, 20s. (\$4.86); general cargo, 30s. (\$7.29) per ton of 40 cubic feet; flour, in 200-pound bags, 25s. (\$6.07) per ton weight.

Rates of passage: Saloon, £12 10s. (\$58.32); round trip, £20 (\$97.20); steerage, £7 10s. (\$36.45); round trip, £12 (\$58.32).

For the company's inter insular service the steamship *Maori*, 174 tons and 200 horsepower, plies regularly between the islands of this group. Freight rates from 15s. to 20s. per ton.

The condition of the Union Steamship Company's service is considered very good, both as to passenger and freight accommodation. Passengers securing tickets for distant ports can remain at any intermediate port en route, such tickets being good for three months from date of issue. Holders of return tickets will be permitted to remain three months at the port for which they are booked. Children are booked at reduced rates. All classes of passengers are victualed by the company in a liberal way. Saloon passengers are provided with all accommodations, together with attendance of experienced servants.

The agent at Suva and Levuka is I. M. Duncan.

Canadian-Australian Line.—This line is controlled by Huddart, Parker & Co., who have a branch office at Sydney; Burns, Philp & Co., agents.

A monthly service is maintained between the ports of Victoria (British Columbia) and Sydney, calling en route both ways at Honolulu and Suva. The steamers on this service are the *Warimoo* and *Araca*, of 3,326 and 5,026 tons, respectively. The time occupied in running between Victoria (British Columbia) and Suva is about seventeen days, and from Suva to Sydney about five days. The distance from Sydney to Suva is 1,770 miles; from Suva to Honolulu, 2,780 miles, and from Honolulu to Victoria, 2,435 miles.

The rates of passage from Sydney are:

To—	Saloon.		Fore cabin.
	Single tickets.	Round trip.	
Suva.....	\$72.90	\$121.50	\$48.60
Honolulu.....	145.80	218.70	58.32
Victoria.....	194.40	243.00	77.76

Liberal arrangements made with families; children under 12 years (with families), half price; under 5 years and over 2 years, one-fourth fare; under 2 years, free, when no separate berth accommodation is required.

Saloon passengers have the option of stopping at any port of call between Sydney and Vancouver, or vice versa, and of resuming it within three months by a later steamer of the line having room. The cabins are provided with every requisite. The cuisine is excellent, fresh meat and poultry and fresh fruit and vegetables being supplied throughout the voyage.

First-class saloon passengers are allowed 40 cubic feet each adult for baggage; fore-cabin passengers, 20 cubic feet; children paying half fare, half these measurements. Any excess is charged for at the rate of 2s. 6d. per cubic foot. The rate for freight is £2 (\$9.72) per ton of 40 cubic feet, general cargo.

CANALS, RAILWAYS, AND HIGHWAYS.

There are no canals or railway lines in this colony. Interisland and river traffic is done by small sailing craft and steam launches owned by private parties and the sugar companies.

The only approaches to macadamized roads are in the two principal towns of this colony, Suva and Levuka.

The great highway for these islands is the sea. The means of communication between the different plantations and the native towns overland are foot and bridle paths not worthy the name of roads usually running along the coast and banks of rivers.

BENJAMIN MORRIS,
Vice Commercial Agent.

LEVUKA, January 1, 1895.

TAHITI.

OCEAN LINES.

Notwithstanding the somewhat remote situation of Tahiti there are two important ocean lines having termini here.

American Line.—The older and the more important line is that between Tahiti and San Francisco, Cal. Three American steamers are engaged in the service, making regular monthly trips each way between the two ports. The Colonial Government of Tahiti has for a number of years granted to this service an annual subsidy of \$15,000 for transportation of mails. These vessels must also call at Taiohoe, Marquesas Islands, on the down trip from San Francisco, to deliver mails.

The distance direct between Tahiti and San Francisco is 3,700 miles, and via Marquesas 4,000 miles. The usual average trip from San Francisco, via Taiohoe and Tahiti, is twenty-eight days, and from Tahiti to San Francisco, thirty-three days.

Although these vessels are only about 350 tons register, they are exceedingly comfortable, and the passenger accommodation is excellent.

Passenger rates: First-class, \$90; second-class, \$45.

Freight rates: From San Francisco, \$8 per ton, and from Tahiti, \$6 per ton. Agents at San Francisco, J. Pinet & Co.

New Zealand Line.—The British steamship *Richmond* has for a number of years made eleven trips per annum between Tahiti and Auckland, New Zealand, calling each way at the islands of Raiatea and Rarotonga. This vessel receives a subsidy of \$4,000 per annum for transportation of mails.

The distance direct between Tahiti and Auckland is 2,400 miles; via Raiatea and Rarotonga, 2,550 miles. The average trip between Tahiti and Auckland is eleven days.

The *Richmond* is about 850 tons register, and accommodation for passenger service is good.

Passenger rates: First class, \$100; second class, \$60.

Freight rates: Both ways and to intermediate ports, \$12 per ton.

INTERISLAND LINES.

Marquesas route.—The regular mail schooner between Tahiti and the Marquesas Islands, via the Island of Fakarava, receives a Government subsidy of about \$2,000 per annum.

The distance from Tahiti to Fakarava is about 180 miles, and to Taiohoe, Marquesas, 750 miles. Average trip from Tahiti to the Marquesas, fourteen days; return trip, eight days. This line includes calling each way at Fakarava.

Passenger rates: To Fakarava, first class, \$9.50; second class, \$4.50; to Marquesas, first class, \$38.50; second class, \$25.

Freight rates: To Fakarava, \$5 per ton, and to the Marquesas, \$6 per ton. The same rates are charged each way.

Gambia-Tubuai route.—This route was established several years ago. A small schooner is employed for the service, and receives a subsidy of \$2,400 per annum for transportation of mails. This vessel makes six round trips a year. The distance between Tahiti and the Gambier Islands, via Tubuai, is about 900 miles.

I am unable to obtain any information regarding passenger and freight rates.

Moorea route.—There is regular weekly communication between Tahiti and Moorea, an island some 20 miles distant. This service is performed by a small steamer of about 70 tons register, which receives from the local government a subsidy of \$1,560 per annum.

Passenger rate, \$2; freight rate, \$1.50 per ton.

The foregoing are the only regular routes of interisland communication at present established. All the principal islands of the colony can, however, be reached by the many trading schooners. It is impossible to state passenger and freight rates, much depending upon distance and other circumstances.

HIGHWAYS.

Tahiti has much to be proud of in the condition of its highways and roads. The so-called "Broom Road" nearly circles the entire island; it is 110 miles in length. This road, although narrow, being on an average 40 feet in width, is kept in excellent order, as are other roads in the town of Papeete and the adjacent districts. On other islands there are also roads, the condition of which, however, can not be compared favorably with that of roads in Tahiti.

J. LAMB DOTY,
Consul.

TAHITI, January 1, 1895.

HAWAIIAN ISLANDS.

RAILWAYS.

The principal railway on these Islands is on the Island of Oahu, and runs between the city of Honolulu and Ewa Mill. It is controlled by a corporation, the Oahu Railroad and Land Company. The total length of the line is 23.3 miles, and it is well constructed and kept in excellent order. It is a single-track road. There are two passenger trains daily, each making the round trip between Honolulu and Ewa Mill.

The following table will show the passenger traffic on this road for the years 1891, 1892, and 1893:

Statistics of passenger traffic.	1891.	1892.	1893.
Number of passengers carried.....	103,644	92,794	82,623
Passenger earnings.....	\$38,021.55	\$29,204.20	\$24,767.35
Number of passengers carried 1 mile.....	1,147,718	963,483	844,242
Average number of miles each passenger carried.....	11.07	10.38	10.21
Average receipts per passenger.....	\$0.367	\$0.314	\$0.298
Average receipts per passenger per mile.....	\$0.033	\$0.03	\$0.029
Average earning per mile of road.....	\$2,055.22	\$1,578.60	\$1,338.77
Sources of passenger receipts:			
Commutation and 1,000-mile tickets.....	\$3,671.00	\$2,728.70	\$2,697.96
Excursion.....	4,148.90	2,576.65	1,053.77
Regular passenger traffic.....	30,201.65	23,898.85	21,015.62
Total.....	38,021.55	29,204.20	24,767.35

The total amount of freight receipts for 1893 was \$33,999.74, and the total freight moved during that period was 24,910 tons.

The equipment of the road available for service January 1, 1894, was as follows:

	Number.		Number.
Locomotives.....	3	Cattle cars.....	3
Passenger cars.....	6	Hand cars.....	4
Combination cars.....	2	Push cars.....	3
Excursion cars.....	6	Water car (capacity, 2,000 gallons) ..	1
Box cars.....	10	Land pile driver.....	1
Flat cars.....	3		

During the year 1894 two locomotives and a number of freight cars have been added to the rolling stock of this road.

It has been determined to extend the road 54 miles beyond Ewa Mill to Kahuku Plantation. Fifteen miles of the new road have been graded, to Waianae Plantation, and the ties and rails for this section have been purchased and are now in transit to that place.

The Kahului Railway, which transportation route of the Island of Maui has for its terminal points Paia and Wailuku, is 13 miles in length. Its equipment consists of 3 locomotives, 2 passenger cars, 1 baggage and mail car, 30 freight cars, and 48 platform and box cars.

The Hawaiian Railway, on the Island of Hawaii, is 20 miles in length and runs between Mahukona and Niulii. Its equipment consists of 3 locomotives and 56 cars.

INTERISLAND STEAMSHIP LINES.

Interisland Steam Navigation Company.—This company has its office in Honolulu, and its vessels ply between the islands of this group.

The steamers in service are:

Name.	Tonnage.	Length.	Breadth.	Depth.
		Feet.	Feet.	Feet.
W. G. Hall.....	380	158	30.06	12.06
Mikahala.....	354	151	29.08	12.03
Iwalani.....	240	146	28	11.06
Waialeale.....	176	120	27	9.08
Keau-hou.....	198	131	28.02	9.06
James Makee.....	137	111	25.06	9.06
Pele.....	134	102	32.06	9.07
Kaala.....	91	94	21	8.33

Wilder's Steamship Company.—This company has its headquarters at Honolulu and owns seven steamboats, which ply between the various islands of the group.

The vessels owned by this corporation are as follows:

Name.	Tonnage.	Horse-power.	Length.	Breadth.	Depth.
			<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
Claudine	609.16	1,000	178.67	32	15
Kinau	773.07	700	196	31	15
Likelike	382.34	525	168	27	17
Hawaii	227.44	400	159	32	10
Kilanea Hou	153.85	200	119	24	10.01
Lehua	129.80	250	116	24	8.06
Mokol.	42.21	125	84	18	7

ELLIS MILLS,
Consul-General.

HONOLULU, *January 1, 1895.*

OCEAN LINES.

Consul-General Mills having omitted any particulars concerning the ocean lines calling at Honolulu, the following is compiled from the Hawaiian Annual, the report of the United States Commissioner of Navigation; the Oregonian, of Portland, Oreg.; the San Francisco Chronicle, and the report of Consul Myers, of Victoria, British Columbia, pp. 27-31 of this volume:

The Hawaiian Annual prints a list of ocean steamships scheduled to arrive at and depart from Honolulu during the year 1895, from which the following is compiled: San Francisco, 34 steamships from and 32 for; colonies, 23 steamships from and 23 for; Vancouver, 12 steamships from and 12 for; China and Japan, 11 steamships from and 11 for; total arrivals, 80; total departures, 78.

The steamships having Vancouver for their starting point, as given in the Hawaiian Annual, belong to the Canadian and Australasian line. Consul Myers, of Victoria, British Columbia, in his report, says:

This line was opened in 1893, the first trip being made by the *Miawera*, since then disabled and returned to England for repairs. The vessels now in service are the *Warrimoo* and *Arawa*. They are of 5,000 tons register, thoroughly seaworthy, of good power, and well fitted for both passenger and freight business. The terminal points are: Vancouver to Honolulu, 2,410 miles; Vancouver to Sydney, 6,824 miles. The first-class fare from Vancouver to Honolulu is \$75; to Suva or Sydney, \$200. Through freight rates run from \$5 to \$24 per ton, according to classification. The steamers stop at Victoria, British Columbia, going and coming, landing at the outer wharf. They make stops of several hours at Honolulu and Suva.

The steamers *Belgic*, *Coptic*, and *Gaelic*, of the Occidental and Oriental Line (British) do an express, passenger, and mail service, alternating with the Pacific Mail Steamship Company's vessels, between San

San Francisco and Yokohama and Hongkong, and were booked, according to the Hawaiian Annual, for nine outward and the same number of homeward calls at Honolulu for 1895.

The steamers *China*, *Peru*, *City of Peking*, and *City of Rio de Janeiro* of the Pacific Mail Steamship Company's line (American), express and passenger mail service, San Francisco to Yokohama and Hongkong, and return, call at Honolulu occasionally, according to the report of the United States Commissioner of Navigation, but they were booked in the Hawaiian Annual for twelve outward and the same number of homeward calls at Honolulu for 1895. The tonnage of these steamships is given as follows: *City of Peking*, 5,000; *City of Rio de Janeiro*, 3,548; *Peru*, 3,528; *China*, 4,940. The *China* flies the British flag; the others fly the United States flag. The first two are iron, and the last two steel vessels.

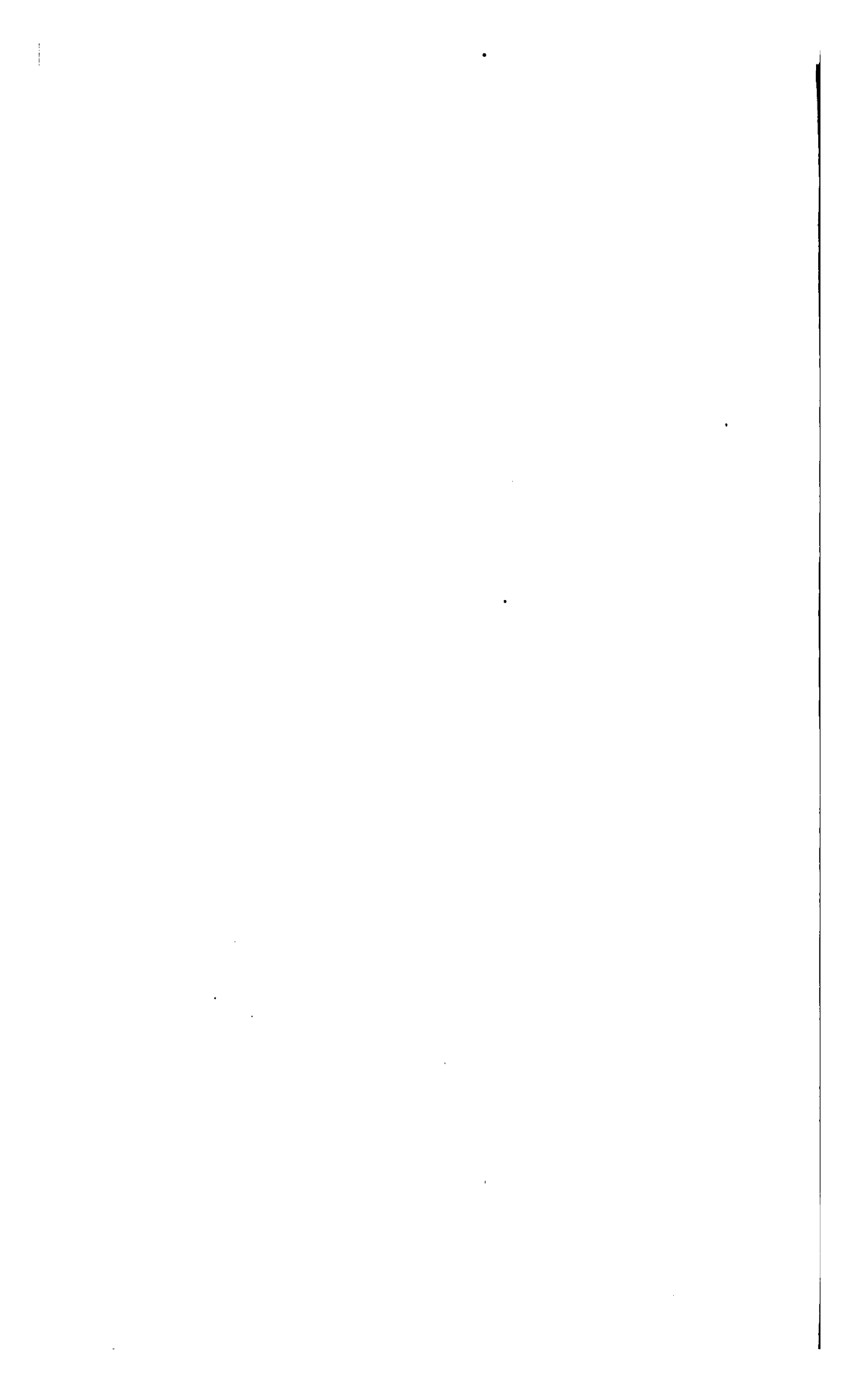
The vessels of the Oceanic Steamship Company (American), express, passenger, and mail service, run from San Francisco to Honolulu three times a month, and to New Zealand and Australia once a month, according to the report of the Commissioner of Navigation.

OCEAN DISTANCES.

The Hawaiian Annual prints the following as the distances from Honolulu:

To—	Nautical miles.	To—	Nautical miles.	To—	Nautical miles.
San Francisco	2,100	Samoa	2,290	Hongkong	4,800
Portland	2,460	Fiji	2,700	Yokohama	3,400
Panama	4,620	Auckland	3,810	Victoria	2,300
Tahiti	2,380	Sydney	4,480	Ocean Island	1,250

APPENDIXES.



APPENDIX A.

OCEAN LINES FROM UNITED STATES PORTS.

[From the report of the U. S. Commissioner of Navigation for 1894.]

Following is a review of established means of steam communication by sea between the ports of the United States and foreign countries. By the phrase "established means of steam communication" the design has been to include, first, steamship lines owning certain steamships which ply at stated periods between the United States and other countries, and, second, lines of communication of reasonable regularity, usually a freight service, established by steamship companies, charterers, or agents, making use of such steamships as are available for the particular service required. These vessels will change from time to time, the same steamship possibly making only one, two, or three trips on one "line" and then being employed by others. In such cases the effort has been made to give a reasonably exact view of the extent of the "line," nature of its service, and class of vessels employed, enumerating only enough vessels to convey this information, without giving all the steamers employed during the year. Such a statement can not be made with the certitude of official figures, but must observe a sense of proportion. The figures as to regular lines are approximately complete. The figures as to the second class of lines are full, but known to be incomplete. Beyond these two classes, steam communication between the United States and foreign countries is carried on by occasional steamships, chartered for single voyages as the conditions of trade and supply of freight may demand. For obvious reasons, no effort to cover this field has been made, such trade lacking the regularity of service on which, as far as possible, the following review is based.

The Bureau expresses its appreciation of the prompt, courteous, and full replies made to nearly every request, by the officers, agents, and managers of steamship lines, for the information on which, in the main, the tabulations are based.

Collectors of customs at all seaports were requested to address and forward to the president, secretary, or principal agent, resident at that port, of lines of steamships plying between that port and foreign countries copies of the following circular:

TREASURY DEPARTMENT, BUREAU OF NAVIGATION,
Washington, D. C., ———, ———.

SIR: The Bureau of Navigation, Treasury Department, wishes to ascertain as fully as practicable and report the present means of communication by established

lines of steamships between the ports of the United States and those of foreign countries. To this end you are respectfully requested to furnish information upon the following matters relating to your line:

First. List of the steamships of the line plying regularly between American and foreign ports, with the nationality, gross tonnage, average number of crew, and approximate value of each steamship.

Second. Schedule indicating ports of regular clearance and entry of the line, with frequency of sailings and usual period of voyage.

Third. Capital stock of the company. Is any American capital invested in the line?

Fourth. A copy of any printed pamphlet or circular, prepared for distribution, giving information as to the line.

Fifth. Such further information as can be furnished, consistently with private interests, bearing upon the inquiry.

Where information desired was not supplied directly, collectors of customs, daily and weekly sailing lists, Lloyd's Register, the Répertoire Générale of the Bureau Veritas, and the tonnage tax reports to this Bureau were consulted to make the review as complete as possible. No replies were received from Galveston and Mobile, which are accordingly omitted. The tonnage reports for the year from Galveston show that about 25 chartered steamships, chiefly British, in steady employment were needed to carry its trade to foreign ports, and that Mobile's trade, chiefly in fruit from the West Indies and Central America, required the steady service of 10 chartered steamships, mainly Norwegian. The direct replies from New Orleans were incomplete, but the facts have been in the main supplied from other sources named. Wilmington, Del., Newport News, Norfolk, Charleston, and Savannah have also carrying trade direct with foreign ports by occasional chartered vessels, but its irregularity impedes a statement of it in lines of established steam communication.

The statements embrace 648 steamships, of a tonnage in round numbers of 2,000,000 gross tons and of a value in round numbers of \$155,000,000, manned by 42,000 men. To determine the tonnage, capital, and men to meet the continuing requirements the year round of our over-sea steam navigation, additions must be made for the service afforded by steamships chartered for occasional voyages at irregular periods not included in these figures, and for omissions. An addition to the figures above of 300,000 tons, valued at \$15,000,000 and manned by about 6,000 men, would be a reasonably accurate statement of the steam tonnage in continuous employment required for our foreign trade.

Of these 648 steamships, 88 bear the American flag, and of these, 19 are foreign-built vessels admitted to American registry. A few are wooden vessels. Americans own a steam tonnage in foreign trade under foreign flags considerably greater than tonnage of a corresponding value under our own flag. The tables show 64 steamships under the British, Belgian, and Hawaiian flags, a majority interest in which is held by American capital. An inquiry into the facts of ownership borders so closely upon the line of governmental interference with pri-

vate business that this Bureau has made no effort to push that inquiry, but has merely invited information on the subject, which in some instances has been freely tendered, as the tables indicate. The replies do not, however, cover the entire field, and doubtless other steamships in the lists besides those indicated by italics are owned and controlled by American capital. This is indisputably the case in the West Indian fruit trade and the petroleum export trade, both of which are inadequately covered by the following tables. Information as to ownership under foreign flags, which is of prime consequence to legislative solution of our shipping problems, doubtless would have been more freely furnished had there been no apprehension on the part of Americans engaged in the foreign steam trade, under the only conditions in which it appears to be possible, that their investments might subject them to newspaper criticism.

So long as the laws forbid Americans to put under the flag and laws of their own country their own shipping purchased abroad, this Bureau has not deemed it feasible to put to shipowners the purely hypothetical question whether, if the laws were changed, they would avail themselves of their own flag and their own laws.

It is assumed that Americans prefer their own flag and the protection of their own Government, and that when they are unable to show that preference the laws require amendment. Attention is particularly directed to the fact that the purchase of steamships abroad by Americans has developed rapidly during the last five years, as indicated by the recent year of build of the vessels so owned.

The tables return 360 vessels under the British flag and 13 under the Belgian flag; but, as already indicated, the distinction of flag is misleading, American citizens owning nearly all the steamships under the Belgian flag and a considerable percentage of those under the British flag. Seventy-five German vessels, 33 Norwegian, 29 French, and 20 Dutch vessels are returned, and the remainder under various flags.

The summaries observe the following order: First, concise statement of the flag, capital stock, when given, American investment, general nature of service, and period of voyage of the several lines, arranged under each port geographically, beginning with lines to Great Britain, with which the bulk of our transatlantic trade is conducted; then Germany, France, and other European countries, Asia, Africa, and South America. Trade to Central American, West Indian, Gulf, and Caribbean foreign ports, and to the British colonies of North America, which is essentially a coasting trade as a matter of navigation, though classed as foreign on account of political divisions, is placed last. The numeral before each line is for ready reference to the corresponding numeral in the table of steamships with which each line conducts its trade from the same port.

The table of steamships gives, first, the name of each vessel. Names italicized indicate that a controlling interest in the vessel is American.

The letter (a) indicates a foreign-built vessel admitted to American registry; the letter (b) a vessel built in the United States. The flag under which the steamship sails, its gross tonnage, material of construction, and year of build follow. An approximate statement of the number of crew and value of each vessel has been furnished in many instances. Where not furnished, the Bureau, on the basis of information furnished by other lines, the description of the vessel, year, and material of construction, etc., gives in brackets an approximation of the total number of crew and value of fleet of each line. The purpose of this line of inquiry has been, not to ascertain the precise value of each vessel and the size of its crew, but to get some measure of the field for capital and labor which established lines of steam communication to foreign ports already afford. The estimates are to be taken with that qualification. It is noted, too, that the valuations owners put on their vessels differ widely, some placing high, some low values upon them. Such variations in the aggregate doubtless offset one another.

A table of registered steam vessels of the United States, not included in the tabulation, is printed at the end of this Appendix, so that the view of American steam vessels registered for foreign trade shall be complete.

NEW YORK TO GREAT BRITAIN.

1. *International Navigation Company* (American, British, Belgian flags).—Capital stock, ———, of which the controlling interest is American. Express, passenger, and mail service weekly to Southampton. Average period of voyage, under 7 days. (*See also Philadelphia.*)

2. *Onward Line* (British).—Capital stock, in round numbers, \$10,000,000. Express, passenger, and mail service weekly to Queenstown and Liverpool. Average period of voyage, under 7 days. (*See also Boston.*)

3. *White Star Line* (British).—Express service weekly to Queenstown and Liverpool. Average period of voyage, under 7 days. Also freight line.

4. *Anchor Line* (British)—Express, passenger, and mail service weekly to Moville and Glasgow.

5. *Guion Line* (British).—Biweekly express, passenger, and mail service to Queenstown and Liverpool. (This line was given up during the year.)

6. *National Line* (British).—Capital stock, \$1,000,000. Weekly freight and live-stock service to London, the passenger service having been abandoned. Average period of trip, 12 to 14 days. (This line is the pioneer line in carrying across the Atlantic meat in refrigerators and live stock; the *Greece*, in March, 1876, having taken out the first raw meat, and the same ship in 1877 the first live cattle.)

7. *Arrow Line* (British).—Capital stock, \$130,000, of which about \$6,000 is American capital. Service, principally freight. Average period of voyage to Leith and Dundee, 10 days.

8. *Manhasset Line* (British flag).—Capital stock, \$962,500; all American capital with the exception of one small interest. (*See also* Baltimore.) Service every 10 days to Bristol and Swansea, Wales.

9. *Bristol City Line* (British).—Semiweekly freight service to Bristol and Swansea and ports in the British Channel.

10. *Wilson Hill Line* (British).—Service, chiefly freight, to London about every week, according to conditions of trade. Average period of voyage, 14 days.

11. *Wilson Line* (British).—Weekly service to Hull and fortnightly service to Newcastle, chiefly freight. Average period of voyage to Hull, 14 days; Newcastle, 16 days.

12. *Allan-State Line* (British).—Weekly service to Glasgow. (*See also* Philadelphia, Boston, Portland.)

13. *Atlantic Transport Line* (British flag).—Capital, \$3,000,000, almost exclusively American. Weekly passenger service to London. Average period of voyage, under 11 days. (*See also* Baltimore and Philadelphia.)

14. *Sumner Line* (American).—Irregular freight and cattle service to Liverpool by chartered steamships of various flags.

15. *Lampart & Holt Line* (British).—Freight service at varying periods to Liverpool. (*See also* New Orleans.)

16. *Knot's Prince Line* (British).—Freight service to British ports at irregular periods. Also to South American and West Indian ports by steamships changed and dispatched according to the requirements of trade on the various lines of service.

NEW YORK TO GERMANY.

17. *North German Lloyd* (German).—Express, mail, and passenger service to Bremen, touching at Southampton, twice a week. Average period of voyage, 8½ days. Freight service twice a month; average time, 14 days.

18. *Hamburg-American* (German).—Weekly express, mail, and passenger service to Hamburg, via Southampton. Average period of voyage, 7½ days. Weekly mail and passenger service to Hamburg; return via Havre; average period of voyage, 10 to 11 days. Semi-monthly freight service to Hamburg direct; average period of voyage, 13 to 14 days. (*See also* Boston, Baltimore, Philadelphia, New Orleans.)

19. *Union Line* (German).—Fortnightly passenger and freight service to Hamburg. Round trip, 6 weeks.

NEW YORK TO FRANCE.

20. *Compagnie Générale Transatlantique* (French).—Capital stock, in round numbers, \$8,000,000. Express, passenger, and mail service, weekly, via Southampton to Havre. Average period of voyage, under 9 days.

21. *Compagnie Nationale de Navigation de Marseille* (French).—Capital stock, \$1,500,000. Passenger and freight service to Marseilles and

Naples, sailings depending upon traffic. Average period of voyage, 18 days.

22. *Nouvelle Compagnie Bordelaise de Navigation* (French).—Capital stock, \$150,000; partly American. Monthly freight service to Bordeaux.

23. *Cyprien Fabre Line* (French).—Fortnightly service to Marseilles (under 17 days) and Naples (under 18 days).

NEW YORK TO THE NETHERLANDS.

24. *Netherlands-American Line* (Dutch).—Capital stock, \$1,680,000. Express, passenger, and mail service, semiweekly to Rotterdam and Amsterdam, calling at Boulogne. Average period of voyage, from 9 to 14 days.

25. *North American Transport Line* (British flag, American charterers).—Freight service to Rotterdam every 10 days. Average period of voyage, 15 days.

NEW YORK TO BELGIUM.

1. *International Navigation Company* (American).—Red Star Line (under Belgian flag). Semiweekly passenger and mail service to Antwerp.

[11.] *Wilson Line* (British).—Fortnightly service, chiefly freight, to Antwerp.

NEW YORK TO THE BALTIC.

[18.] *Hamburg-American* (German).—Scandia Line. Fortnightly to Christiansand, Gothenburg, Copenhagen, and Stettin. Average period of voyage, 15 days.

26. *Thingvalla Line* (Danish).—Capital stock, \$536,000. Service every 10 days to Christiansand, Christiania, Copenhagen, and Stettin.

NEW YORK TO PORTUGAL AND SPAIN.

27. *Linha de Vapores Portuguezes* (Portuguese).—Passenger and freight service to the Azores, Oporto, Lisbon, and Cadiz. Round trip, 6 to 8 weeks.

28. *Empresa Insulano* (Portuguese).—Passenger and freight service to the Azores, Cape Verde and Canary islands, and Lisbon every 6 weeks. Usual period of voyage to Lisbon, 15 days.

NEW YORK TO THE MEDITERRANEAN.

[4.] *Anchor Line*.—To Gibraltar, Naples, Genoa, Leghorn, Messina, and Palermo. The service is not regular, but about once a fortnight. Steamers in this service load, according to freight offering, for Glasgow, Liverpool, or Mediterranean ports.

[17.] *North-German Lloyd*.—To Naples twice a month. Average period of voyage, 11 days, in conjunction with Hamburg-American Line. To Genoa twice a month; average period of voyage, 15 days.

[18.] *Hamburg-American*.—To Naples ~~twice a month~~. Average period of voyage, 11 days, in conjunction with the ~~North-German~~ Lloyd Line.

29. *Navigazione Generale Italiana* (Italian).—Capital stock, \$10,000,000. Passenger and freight service fortnightly to Gibraltar (15 days) and to Genoa (19 days.)

30. *New York and Mediterranean Steamship Company*.—"Phelps Line" (British flag). American capital. Freight service to Mediterranean ports.

NEW YORK TO CHINA AND JAPAN.

31. *Barber & Co.* (charterers).—Freight service about once in six weeks by varying chartered vessels to Singapore, Hongkong, Shanghai, Hiogo, and Yokohama, via Suez, calling at Hodeida and Aden.

32. *Perry & Co.* (charterers).—Same as above.

NEW YORK TO AFRICA.

33. *Union Clan Line and American and African Line* (British).—Alternate monthly freight service to South and East African ports by varying chartered vessels.

NEW YORK TO THE RED SEA AND EAST INDIAN PORTS.

34. *Daniel Bacon* (charterer).—Bimonthly freight service to Jeddah, Hodeida, Aden, and Bombay by varying chartered steamers.

NEW YORK TO SOUTH AMERICA.

35. *Red D Line* (American).—Mail, express, and passenger service every 10 days to Curacao, Puerto Cabello, La Guayra. Average round trip, 23 days. Also freight line to Maracaibo (1 steamer); round trip, 30 days. Also 1 steamer connecting Curacao and Maracaibo, and 1 steamer connecting Curacao and Le Vela de Coro.

36. *Robert M. Sloman's Line* (German).—Freight service monthly to Rio de Janeiro, Pernambuco, and Santos. Average round trip, 90 days. (See also Baltimore.)

37. *Booth Steamship Line* (British).—Monthly freight service to Para and Manaos; return via Barbados. Average round trip, 7 weeks. Also monthly freight service to Para, Maranhã, and Cera or Pernambuco, thence to London, and return via same ports to New York.

38. *Red Cross Line* (British).—Freight and mail service to various ports in Brazil.

39. *Demerara Line* (Norwegian flag, L. W. & P. Armstrong, charterers).—Freight service once a month to Demerara, British Guiana.

[15.] *Lampart & Holt Line* (British).—Freight and passenger service every 10 days to Pernambuco, Rio de Janeiro, and Bahia. Also Montevideo, Buenos Ayres, and Rosario at irregular intervals. The company owns 70 steamers, which are interchanged from one service to another according to the requirements of trade.

Knott's Prince Line. (See above.)

40. *Norton Line* (British).—Freight service semimonthly to Montevideo, Buenos Ayres, and Rosario; return via Rio de Janeiro.

41. *W. R. Grace & Co., Merchants' Line* (British flag).—American capital, \$650,000. Monthly freight service to ports on west coast of South America.

NEW YORK TO CENTRAL AMERICA.

42. *Pacific Mail Steamship Company* (American).—Capital stock, \$20,000,000. Express, passenger, and mail service weekly to Colou. Average period of voyage, 7 days. (See also San Francisco.)

43. *Columbian Line* (American; Panama Railroad Company, charterers).—New York to Colou every 10 days. Average period of voyage, 7 days. (See also San Francisco.)

44. *Central American Steamship Line* (James Rankine, charterer).—Fortnightly passenger and freight service to Jamaica, Belize, Greytown, and ports in Honduras and Nicaragua.

45. *Merchants' Regular Line* (R. Williams, jr.).—Service to Jamaica, Colou, Greytown, Bluefields, and ports of Nicaragua.

46. *Nicaragua Line* (Hurlbut & Co., charterers).—Fortnightly service to Bluefields and Bocas del Toro.

47. *H. Dumois & Co.* (charterers).—Freight service, chiefly banana trade, to Baracoa and Gibara by chartered steamers, varying according to season and trade from weekly to bimonthly. (See also Boston and Philadelphia.)

NEW YORK TO WEST INDIES AND MEXICO.

48. *New York and Cuba Mail Steamship Company* (American).—Capital stock, \$2,500,000; all but \$300,000 American. Express, passenger, and mail service to Havana, Matanzas, and Central American ports. Also fortnightly to Nassau, St. Jago, and Cienfuegos.

49. *Koninklijke West-Indische Maildienst* (Dutch).—Every three weeks to Haiti, Curaçao, Porto Cabello, La Guayra, Trinidad, Demerara, Paramaribo, and other West Indian and South American ports to Amsterdam.

50. *Campania Transatlantica Española* (Spanish).—Passenger and mail service three times a month to Havana, Mexico, United States of Colombia, and Venezuela.

51. *Atlas Line* (British).—Passenger and mail service to Haiti and ports of United States of Colombia fortnightly; to South Haiti and Port Limon fortnightly; to Kingston, Jacmel, and Aux Cayes fortnightly. Also special winter passenger service to the West Indies.

52. *Clyde's Dominican Line* (American).—Fortnightly service to ports of Santo Domingo.

53. *Clyde's Haitien Line* (American).—Monthly service to ports of Haiti.

54. *New York, Bermuda, and West India Line* (British).—Fortnightly passenger and mail service to Bermuda. Average period of voyage, under 3 days.

55. *Bahama Steamship Company* (British).—Capital stock, \$80,000, of which Americans own one-fourth. Passenger and mail service monthly to the Bahamas.

56. *Waydell & Co.* (charterers).—Monthly service to Matanzas and north Cuban ports. Round trip, 16 to 20 days. Also monthly to St. Iago de Cuba and Cienfuegos. Round trip, 28 to 30 days.

57. *New York and Porto Rico Line* (charterers).—Fortnightly freight service to Porto Rico. Round trip, 4 weeks.

58. *Trinidad Line* (Christall & Co., charterers).—Freight service to Granada, Trinidad, and Demerara. Usually weekly by chartered vessels.

59. *Quebec Steamship Line* (British).—To St. Thomas, St. Croix, Guadeloupe, Martinique, St. Lucia, and Barbados.

Knott's Line. (See above.)

60. *Munson Line* (charterers).—Irregular freight service to Cuban ports, usually every 10 days by changing chartered vessels. Average period of round trip, 30 days. (See also Philadelphia and Norfolk.)

NEW YORK TO BRITISH PROVINCES.

61. *Red Cross Line* (British).—Capital stock, \$375,000, partly American. Passenger and freight service every 10 days to Halifax, Nova Scotia, and St. Johns, Newfoundland. Average period of round trip, 18 days.

1. INTERNATIONAL NAVIGATION COMPANY.

(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
AMERICAN LINE.						
<i>Paris</i> (a).....	American	10,508	Steel.....	1889	.....	.....
<i>New York</i> (a).....	do	10,508	do	1888	.....	.....
<i>Conemaugh</i> (a).....	do	2,328	Iron	1882	.....	.....
<i>Berlin</i>	British	5,528	do	1874	.....	.....
<i>Chester</i>	do	4,470	do	1873	.....	.....
ANTWERP, RED STAR LINE.						
<i>Friesland</i>	Belgian	7,116	Steel.....	1889	.....	.....
<i>Westerland</i>	do	5,736	do	1883	.....	.....
<i>Noordland</i>	do	5,212	do	1883	.....	.....
<i>Rhinland</i>	do	3,689	Iron	1879	.....	.....
<i>Belgenland</i>	do	3,692	do	1878	.....	.....
<i>Nederland</i>	do	2,839	do	1873	.....	.....
<i>Waesland</i>	do	4,752	do	1882	.....	.....
		66,376			[2,500]	[\$6,000,000]

2. THE CUNARD STEAMSHIP COMPANY.

<i>Campania</i>	British	12,950	Steel.....	1893	.....	\$3,000,000
<i>Lucania</i>	do	12,950	do	1893	.....	3,000,000
<i>Etruria</i>	do	8,120	do	1884	.....	1,000,000
<i>Umbria</i>	do	8,128	do	1884	.....	1,000,000
<i>Aurania</i>	do	7,269	do	1883	.....	800,000
<i>Servia</i>	do	7,392	do	1881	.....	700,000
		56,809			[2,300]	9,500,000

HIGHWAYS OF COMMERCE.

3 WHITE STAR LINE.

(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.

Name.	Flag.	Gross tons.	Material.	Year built	No. crew.	Value.
EXPRESS.						
Majestic.....	British.....	9,933	Steel.....	1889		
Teutonic.....	do.....	9,952	do.....	1889		
Germanic.....	do.....	5,008	Iron.....	1874		
Britannic.....	do.....	5,004	do.....	1874		
Adriatic.....	do.....	3,887	do.....	1871		
FREIGHT.						
Cevic.....	British.....	8,801	Steel.....	1893		
Bovic.....	do.....	6,583	do.....	1892		
Nomadic.....	do.....	5,749	do.....	1891		
Tauric.....	do.....	5,727	do.....	1891		
Cutic.....	do.....	4,639	do.....	1888		
Runic.....	do.....	4,649	do.....	1889		
		69,432			[1,800]	[\$3,000,000]

4. ANCHOR LINE.

Anchora.....	British.....	4,168	Iron.....	1874		
Circassia.....	do.....	4,272	do.....	1878		
City of Rome.....	do.....	3,415	do.....	1881		
Devonia.....	do.....	4,270	do.....	1877		
Ethiopia.....	do.....	4,004	do.....	1873		
Furnessia.....	do.....	5,485	do.....	1880		
MEDITERRANEAN.						
Alsatia.....	British.....	2,799	Iron.....	1876		
Belgravia.....	do.....	5,000	do.....	1881		
Bolivia.....	do.....	4,050	do.....	1873		
Britannia.....	do.....	3,069	do.....	1879		
California.....	do.....	3,410	do.....	1872		
Elysia.....	do.....	2,783	do.....	1873		
Hesperia.....	do.....	3,027	do.....	1882		
India.....	do.....	2,476	do.....	1868		
Italia.....	do.....	2,245	do.....	1872		
Olympia.....	do.....	2,051	do.....	1871		
Scotia.....	do.....	3,287	do.....	1869		
Victoria.....	do.....	3,242	do.....	1872		
		68,003			[2,500]	[\$3,000,000]

5. GUION STEAMSHIP COMPANY.

Alaska.....	British.....	6,900	Iron.....	1881		
Arizona.....	do.....	6,000	do.....	1879		
		12,900			[400]	[\$600,000]

6. NATIONAL LINE.

America.....	British.....	5,157	Steel.....	1891		
Europe.....	do.....	5,302	do.....	1891		
Spain.....	do.....	4,512	Iron.....	1871		
England.....	do.....	4,897	do.....	1865		
France.....	do.....	4,281	do.....	1867		
Greece.....	do.....	4,309	do.....	1863		* \$3,500,000
Denmark.....	do.....	3,723	do.....	1865		
The Queen.....	do.....	4,457	do.....	1865		
		36,638			[390]	

* Cost price.

HIGHWAYS OF COMMERCE.

671

7. ARROW LINE.

(a) Foreign-built vessel admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Croma	British	3, 187	Iron	1888	.....	\$150, 000
Croft	do	2, 675	Steel	1891	.....	130, 000
Critic	do	2, 601	Iron	1881	.....	85, 000
Principia	do	2, 749	do	1881	.....	60, 000
		11, 212			[150]	425, 000

8. MANHANSSET LINE.

<i>Manhanset</i>	British	2, 684	Steel	1891	.....	\$160, 000
<i>Mohican</i>	do	2, 728	do	1892	.....	160, 000
<i>Monomoy</i>	do	2, 783	do	1892	.....	160, 000
<i>Massasoit</i>	do	2, 783	do	1892	.....	160, 000
		10, 978			[150]	640, 000

9. BRISTOL CITY LINE.

Boston City	British	2, 334	Iron	1892	.....
Chicago City	do	2, 324	Steel	1892	.....
Wells City	do	1, 814	do	1890	.....
Jersey City	do	1, 936	Iron	1892	.....
Kansas City	do	3, 679	Steel	1899	.....
Exeter City	do	2, 198	do	1897	.....
Llandaff City	do	1, 936	Iron	1892	.....
Brooklyn City	do	1, 726	do	1881	.....
		17, 947			[200]	[\$750, 000]

10. WILSON-HILL LINE.

Lydian Monarch	British	3, 987	Steel	1881	.....	\$243, 125
Alecto	do	3, 607	do	1893	.....	243, 125
Ludgate Hill	do	4, 063	do	1881	.....	291, 750
Richmond Hill	do	4, 126	do	1882	.....	291, 750
		15, 783			[165]	\$1, 069, 750

11. WILSON LINE.

Francisco	British	4, 604	Steel	1891	.....	\$291, 750
Martello	do	3, 709	Iron	1884	.....	243, 125
Colorado	do	4, 220	Steel	1887	.....	243, 125
Galileo	do	3, 080	Iron	1881	.....	170, 188
Buffalo	do	4, 431	Steel	1885	.....	291, 750
Hindoo	do	3, 592	do	1889	.....	243, 125
ANTWERP.						
Sorrento	British	2, 208	Iron	1878	.....	97, 250
Othello	do	2, 479	do	1872	.....	97, 250
Lepanto	do	2, 287	do	1877	.....	97, 250
NEWCASTLE.						
Chicago	British	2, 729	Iron	1884	.....	97, 250
Marengo	do	2, 273	do	1879	.....	97, 250
Selerno	do	2, 662	do	1879	.....	97, 250
		37, 654			[500]	\$2, 036, 563

HIGHWAYS OF COMMERCE.

12. ALLAN LINE.

(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
State of California.....	British.....	5,500	Steel.....	1891		
Norwegian.....	do.....	3,523	Iron.....	1905		
State of Nebraska.....	do.....	4,000	do.....	1881		
Grecian.....	do.....	3,613	do.....	1879		
		16,636			[280]	[\$900,000]

13. ATLANTIC TRANSPORT LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Manitoba.....	British.....	5,672	Steel.....	1892		
Massachusetts.....	do.....	5,673	do.....	1892		
Mohawk.....	do.....	5,658	do.....	1892		
Mobile.....	do.....	5,790	do.....	1893		
Montezuma.....	do.....	5,504	do.....	1891		
Mariposa.....	do.....	5,305	do.....	1891		
Mississippi.....	do.....	3,732	do.....	1890		
		37,824			[700]	[\$2,400,000]

14. SUMNER LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Euskaro.....	Spanish.....	2,472	Iron.....	1886		
St. Ronans.....	British.....	4,457	do.....	1881		
		6,929			[100]	[\$275,000]

15. LAMPORT & HOLT LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Hevelius.....	Belgian.....	2,611	Iron.....	1874		
Bellucia.....	British.....	2,715	Steel.....	1888		
Galileo.....	do.....	3,090	Iron.....	1881		
Laurel.....	do.....	1,935	do.....	1879		
Queensland.....	do.....	3,892	Steel.....	1890		
Maskelyne.....	Belgian.....	2,605	Iron.....	1874		
Rubens.....	British.....	2,077	Steel.....	1887		
Hubert.....	do.....	1,922	do.....	1884		
Euclid.....	do.....	1,559	Iron.....	1877		
Olbeis.....	Belgian.....	2,168	do.....	1870		
		24,564			[400]	[\$1,250,000]

16. KNOTT'S PRINCE LINES.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Indian Prince.....	British.....	1,892	Iron.....	1886		
Castilian Prince.....	do.....	2,316	Steel.....	1893		
Turkish Prince.....	do.....	1,986	Iron.....	1879		
Asiatic Prince.....	do.....	2,183	Steel.....	1888		
British Prince.....	do.....	3,937	do.....	1882		
Lancastrian Prince.....	do.....	1,746	Iron.....	1881		
Oranje Prince.....	do.....	1,868	Steel.....	1889		
Tudor Prince.....	do.....	1,460	Iron.....	1884		
Grecian Prince.....	do.....	2,204	Steel.....	1890		
Arabian Prince.....	do.....	2,265	do.....	1889		
Kafir Prince.....	do.....	2,228	do.....	1891		
		24,055			[400]	[\$1,250,000]

HIGHWAYS OF COMMERCE.

673

17. NORTH GERMAN LLOYD.

[(a) Foreign built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tonn.	Material.	Year built.	No. crew.	Value.
Havel.....	German.....	6,963	Steel.....	1890	180	.....
Spreo.....	do.....	6,623	do.....	1890	180	.....
Lahn.....	do.....	5,097	do.....	1887	180	.....
Saale.....	do.....	4,965	do.....	1886	180	.....
Trave.....	do.....	4,966	do.....	1886	180	.....
Aller.....	do.....	4,964	do.....	1885	180	.....
Elbe.....	do.....	4,510	Iron.....	1881	180	.....
Munchen.....	do.....	4,796	Steel.....	1889	60	.....
H. H. Meier.....	do.....	5,306	do.....	1892	60	.....
Roland.....	do.....	3,660	do.....	1883	60	.....
Wittekind.....	do.....	4,990	do.....	1889	60	.....
NAPLES.						
Ems.....	German.....	4,728	Iron.....	1884	180	.....
Fulda.....	do.....	4,814	do.....	1882	180	.....
Werra.....	do.....	4,815	do.....	1882	180	.....
Kaiser Wilhelm II.....	do.....	6,991	Steel.....	1889	180	.....
		90,067			2,460	[\$8,000,000]

18. HAMBURG-AMERICAN LINE.

EXPRESS.						
Augusta Victoria.....	German.....	7,761	Steel.....	1889	300	.....
Columbia.....	do.....	7,363	do.....	1889	300	.....
Fuerst Bismarck.....	do.....	8,874	do.....	1890	300	.....
Normannia.....	do.....	8,250	do.....	1890	300	.....
SCANDIA LINE.						
Virginia.....	German.....	2,884	Steel.....	1891	75	.....
Venetia.....	do.....	2,891	do.....	1891	75	.....
Slavonia.....	do.....	2,274	Iron.....	1883	75	.....
Gothia.....	do.....	2,433	do.....	1884		.....
MEDITERRANEAN.						
Suevia.....	German.....	3,609	Iron.....	1874	75	.....
Wieland.....	do.....	3,504	do.....	1874	75	.....
Gellert.....	do.....	3,533	do.....	1874	75	.....
HAMBURG.						
Scandia.....	German.....	4,375	Iron.....	1889	75	.....
Bohemia.....	do.....	3,423	do.....	1881	75	.....
Russia.....	do.....	4,017	do.....	1889	75	.....
Moravia.....	do.....	3,739	do.....	1883	40	.....
Dania.....	do.....	4,379	Steel.....	1889	75	.....
Rhaetia.....	do.....	3,553	do.....	1883	40	.....
Rugia.....	do.....	3,467	Iron.....	1882	40	.....
California.....	do.....	2,690	do.....	1883	40	.....
Italia.....	do.....	3,488	Steel.....	1889	40	.....
Prussia.....	do.....	5,937	do.....	1894	75	.....
Persia.....	do.....	6,000	do.....	1894	75	.....
Grimm.....	do.....	2,599	do.....	1890	40	.....
		101,053			2,340	[\$8,000,00]

19. UNION LINE STEAMERS.

Amalfi.....	German.....	2,345	Iron.....	1891	40	\$300,000
Marsala.....	do.....	2,397	do.....	1892	40	370,000
Taormina.....	do.....	2,422	do.....	1884	40	465,000
Sorrento.....	do.....	2,362	do.....	1881	40	325,000
		9,526			160	1,460,000

25. NORTH AMERICAN TRANSPORT LINE.

2) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Loch Lomond.....	British.....	2,571	Steel.....	1888	.....	\$125,000
Loch Maree.....	do.....	2,668	do.....	1890	.....	125,000
Loch Etive.....	do.....	2,138	do.....	1886	.....	100,000
Loch Arlisle.....	do.....	2,141	Iron.....	1882	.....	75,000
Lochinchester.....	do.....	2,198	do.....	1882	.....	75,000
		11,746	.....	.....	[175]	500,000

26. THINGVALLA.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Amerika.....	Danish.....	3,867	Iron.....	1872	105	\$194,500
Thingvalla.....	do.....	2,524	do.....	1874	44	97,250
Island.....	do.....	2,844	do.....	1882	58	97,250
Forge.....	do.....	3,359	do.....	1881	60	97,250
Islela.....	do.....	3,258	do.....	1884	68	97,250
		15,852	.....	.....	335	583,500

27. LINHA DE VAPORES PORTUGUEZES.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Donna Maria.....	Portuguese.....	2,539	Steel.....	1887	61	\$125,000
Blinda.....	do.....	1,479	do.....	1887	31	100,000
Devenum.....	do.....	2,298	Iron.....	1888	31	125,000
		6,316	.....	.....	122	350,000

28. EMPRESA INSULANO.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Peninsular.....	Portuguese.....	2,744	Steel.....	1887	67	\$200,000
Vega.....	do.....	2,893	Iron.....	1879	67	200,000
		5,637	.....	.....	134	400,000

29. NAVIGAZIONE GENERALE ITALIANA.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Entella.....	Italian.....	2,258	Iron.....	1883	55	.....
Letimbro.....	do.....	2,172	do.....	1883	55	.....
Plata.....	do.....	1,861	do.....	1878	50	.....
Iniziativa.....	do.....	2,040	do.....	1881	55	.....
San Giorgio.....	do.....	2,817	do.....	1886	60	.....
Montebello.....	do.....	2,577	Steel.....	1887	60	.....
		13,725	.....	.....	335	[\$800,000]

30. NEW YORK AND MEDITERRANEAN LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Pawnee.....	British.....	1,798	Iron.....	1881	.....	.....
Peonic.....	do.....	1,795	do.....	1881	.....	.....
Picqua.....	do.....	1,796	do.....	1882	.....	.....
Pocahontas.....	do.....	2,627	Steel.....	1889	.....	.....
Pocasset.....	do.....	2,627	do.....	1889	.....	.....
Pontiac.....	do.....	1,698	Iron.....	1879	.....	.....
Powhatan.....	do.....	2,536	Steel.....	1886	.....	.....
		14,877	.....	.....	[250]	[\$750,000]

31. BARBER & CO. (AGENTS).

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Gulf of Genoa.....	British.....	3,448	Steel.....	1891	.....	.....
Oscar II.....	Norwegian.....	3,057	do.....	1893	.....	.....
Maple Branch.....	British.....	2,637	do.....	1888	.....	.....
Oakley.....	do.....	2,674	do.....	1892	.....	.....
Strathdon.....	do.....	2,643	do.....	1890	.....	.....
		14,459	.....	.....	[200]	[\$700,000]

20. COMPAGNIE GÉNÉRALE TRANSATLANTIQUE.

(a) Foreign-built vessels admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
La Touraine.....	French.....	8,863	Steel.....	1890		
La Champagne.....	do.....	7,087	do.....	1885		
La Bourgogne.....	do.....	7,305	do.....	1885		
La Bretagne.....	do.....	7,112	do.....	1886		
La Normandie.....	do.....	6,283	Iron.....	1882		
La Navarre.....	do.....	6,959	Steel.....	1892		
		43,609			[1,600]	[\$7,000,000]

21. COMPAGNIE NATIONALE DE NAVIGATION DE MARSEILLES.

Cochin.....	French.....	3,645	Iron and steel.	1884	50	\$200,000
Cachemire.....	do.....	3,360	do.....	1884	50	200,000
Canton.....	do.....	3,721	Iron.....	1882	50	200,000
Chandernagor.....	do.....	3,075	do.....	1882	45	175,000
Cheribon.....	do.....	3,075	do.....	1882	50	175,000
Colombo.....	do.....	3,733	do.....	1882	50	200,000
Comorin.....	do.....	3,742	do.....	1882	50	200,000
Hindoustan.....	do.....	2,953	do.....	1881	40	175,000
		27,304			335	1,500,000

22. NOUVELLE COMPAGNIE BORDELAISE.

Chateau Lafite.....	French.....	3,462	Iron.....	1881	45	\$150,000
Panama.....	do.....	2,118	do.....	1881	30	100,000
		5,580			75	250,000

23. CYPRIEN FABRE LINE.

Alesia.....	French.....	2,851	Iron.....	1882	43	About \$150,000 each.
Burgundia.....	do.....	2,160	do.....	1882	43	
Britannia.....	do.....	2,527	do.....	1881	42	
Gergovie.....	do.....	2,144	do.....	1883	36	
Massilia.....	do.....	3,327	do.....	1883	43	
Neustria.....	do.....	2,959	Iron.....	1883	43	
		15,977			250	900,000

24. NETHERLANDS-AMERICAN LINE.

Spaarndam.....	Dutch.....	4,600	Steel.....	1881	120	
Maasdam.....	do.....	4,000	Iron.....	1871	120	
Veendam.....	do.....	4,000	do.....	1871	120	
Obdam.....	do.....	3,700	Steel.....	1880	100	
Werkendam.....	do.....	3,700	do.....	1881	100	
Amsterdam.....	do.....	3,650	Iron.....	1879	100	
Rotterdam.....	do.....	3,500	do.....	1878	100	
Didam.....	do.....	2,800	Steel.....	1891	70	
Dubbeldam.....	do.....	2,800	do.....	1891	70	
Edam.....	do.....	3,200	do.....	1883	50	
Zaandam.....	do.....	3,100	Iron.....	1882	50	
Schiedam.....	do.....	2,800	do.....	1874	50	
P. Caland.....	do.....	2,600	do.....	1874	50	
		44,450			1,100	[\$2,500,000]

HIGHWAYS OF COMMERCE.

675

25. NORTH AMERICAN TRANSPORT LINE.

(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Loch Lomond.....	British	2,571	Steel.....	1888	.....	\$125,000
Loch Maree.....	do	2,698	do	1890	.....	125,000
Loch Etive.....	do	2,138	do	1880	.....	100,000
Carlisle.....	do	2,141	Iron	1882	.....	75,000
Winchester.....	do	2,198	do	1882	.....	75,000
		11,746	.....	.....	[175]	500,000

26. THINGVALLA.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Amerika.....	Danish	3,867	Iron	1872	105	\$194,500
Thingvalla.....	do	2,524	do	1874	44	97,250
Island.....	do	2,844	do	1882	58	97,250
Norge.....	do	3,359	do	1881	60	97,250
Hekla.....	do	3,258	do	1884	68	97,250
		15,852	.....	.....	335	583,500

27. LINHA DE VAPORES PORTUGUEZES.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Donna Maria.....	Portuguese...	2,539	Steel.....	1887	61	\$125,000
Olinda.....	do	1,479	do	1887	31	100,000
Oevenum.....	do	2,298	Iron	1888	31	125,000
		6,316	.....	.....	122	350,000

28. EMPRESA INSULANO.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Peninsular.....	Portuguese...	2,744	Steel.....	1887	67	\$200,000
Vega.....	do	2,893	Iron	1879	67	200,000
		5,637	.....	.....	134	400,000

29. NAVIGAZIONE GENERALE ITALIANA.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Entella.....	Italian	2,258	Iron	1883	55	.....
Letimbro.....	do	2,172	do	1883	55	.....
Plata.....	do	1,861	do	1878	50	.....
Iniziativa.....	do	2,040	do	1881	55	.....
San Giorgio.....	do	2,817	do	1886	60	.....
Montebello.....	do	2,577	Steel.....	1887	60	.....
		13,725	.....	.....	335	[\$800,000]

30. NEW YORK AND MEDITERRANEAN LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Pawnee.....	British	1,798	Iron	1881	.....	.....
Peconic.....	do	1,795	do	1881	.....	.....
Picqua.....	do	1,796	do	1882	.....	.....
Pocahontas.....	do	2,627	Steel.....	1889	.....	.....
Potasset.....	do	2,627	do	1889	.....	.....
Pontiac.....	do	1,698	Iron	1879	.....	.....
Powhatan.....	do	2,536	Steel.....	1886	.....	.....
		14,877	.....	.....	[250]	[\$750,000]

31. BARBER & CO. (AGENTS).

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Gulf of Genoa.....	British	3,448	Steel.....	1891	.....	.....
Oscar II.....	Norwegian...	3,057	do	1893	.....	.....
Maple Branch.....	British	2,637	do	1888	.....	.....
Oakley.....	do	2,674	do	1892	.....	.....
Strathdon.....	do	2,643	do	1890	.....	.....
		14,459	.....	.....	[200]	[\$700,000]

32. EDWARD PERRY & CO.

[(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Cardiganshire	British	2,486	Iron	1883		
Flintshire	do	2,879	Steel	1888		
		5,365			[75]	[\$250,000]

33. UNION CLAN AND AMERICAN AND AFRICAN LINES.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Olive Branch	British	2,732	Steel	1887		
Drummond	do	2,832	do	1890		
Craigearn	do	3,013	do	1894		
		8,577			[125]	[\$500,000]

34. DANIEL BACON (CHARTERER).

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Loango	British	2,935	Steel	1883		
Glenloig	do	3,100	do	1892		
St. Regulus	do	3,086	do	1886		
York	do	3,290	Iron	1883		
Ethelgonda	do	2,692	Steel	1891		
		15,103			[275]	[\$750,000]

35. RED D LINE OF STEAMERS.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Venezuela (b)	American	2,843	Iron	1889	60	\$300,000
Caracas (b)	do	2,584	do	1889	60	300,000
Philadelphia (b)	do	2,520	do	1885	56	250,000
Maracaibo (b)	do	1,282	Wood	1889	31	150,000
Merida (b)	do	517	do	1890	27	60,000
Nassau (b)	do	310	do	1887	15	40,000
Valencia (b)	do	1,598	Iron	1882	40	150,000
		11,634			299	1,250,000

36. ROBERT M. SLOMAN LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Capua	German	2,012	Steel	1889	36	\$470,000
Salerno	British	2,062	Iron	1879	36	470,000
Catania	German	2,198	do	1881	38	330,000
		6,272			110	1,270,000

37. BOOTH STEAMSHIP COMPANY.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Basil	British	1,184	Iron	1871	32	
Clement	do	1,227	do	1877	32	
Cyril	do	1,190	do	1882	32	
Gregory	do	1,497	do	1879	32	
Hilary	do	1,929	Steel	1889	35	
Hildebrand	do	1,947	do	1893	40	
Hubert	do	1,921	do	1894	40	
Justin	do	1,744	Iron	1880	35	
Origen	do	1,541	Steel	1886	35	
		14,180			313	\$900,000

38. RED CROSS LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Amazonense	British	1,692	Iron	1869		
Cearense	do	1,381	do	1880		
Maranhense	do	1,480	do	1880		
Liabonense	do	1,594	do	1871		
Paraense	do	1,697	do	1871		
Sobralense	do	1,982	do	1884		
Mananense	do	1,672	do	1874		
Theresina	do	1,150	do	1876		
Obidense	do	2,380	Steel	1891		
		15,028			[300]	[\$600,000]

HIGHWAYS OF COMMERCE.

677

39. DEMERARA LINE.

[(a) Foreign-built vessel admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name	Flag.	Gross tons.	Material.	Year built	No. crew.	Value.
Tjomo	Norwegian ..	1,444	Steel	1892	21	\$100,000

40. NORTON LINE

Delcomyn	British	1,818	Iron	1890	28	\$68,040
Manitoba	do	2,127	Steel	1897	31	85,050
Merida	do	2,280	do	1898	31	111,780
Etona	do	2,513	do	1890	35	121,500
Tagua	do	305	do	1872	18	48,740
		9,543			143	480,110

41. WM. R. GRACE & CO.

Coya	British	2,607	Steel	1886	36	\$160,000
Condor	do	3,035	do	1893	36	160,000
Capas	do	3,052	do	1893	36	160,000
Cactique	do	3,050	do	1894	36	160,000
		11,744			144	640,000

42. PACIFIC MAIL STEAMSHIP COMPANY.

City of Para (b)	American	3,532	Iron	1878	77	\$543,000
Columbia (b)	do	3,617	Steel	1892	78	600,000
Newport (b)	do	2,735	Iron	1890	76	350,000
		9,884			231	1,493,000

43. COLUMBIAN LINE.

Alliance (b)	American	2,985	Iron	1896		\$225,000
Advance (b)	do	2,607	do	1893		200,000
Finance (b)	do	2,603	do	1893		200,000
		6,195			[125]	625,000

44. CENTRAL AMERICAN STEAMSHIP LINE (CHARTERERS).

Delta	British	831	Iron	1854		
Bermuda	do	1,284	do	1874		
Czarina (b)	American	983	do	1893		
		3,098			[60]	[\$125,000]

45. MERCHANTS' REGULAR LINE.

Flamborough	British	993	Iron	1867		
Premier	do	374	Steel	1891		
		1,367			[35]	[\$60,000]

46. NICARAGUA LINE.

Tyr	Norwegian	2,253	Steel	1891		
George Sealy	do	844	do	1894		
John Wilson	do	808	do	1893		
		3,905			[70]	[\$300,000]

HIGHWAYS OF COMMERCE.

47. H. DUMOIS & CO.

(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value
<i>Tyrian</i>	British.....	1,455	Steel.....	1890	.....	.....
<i>Claribel</i>	do.....	1,134	Iron.....	1872	.....	.....
<i>Banes</i>	Norwegian.....	748	Steel.....	1890	.....	.....
<i>Baracoa</i>	do.....	784	do.....	1890	.....	.....
<i>Kitty</i>	do.....	1,004	do.....	1891	.....	.....
<i>Leon</i>	do.....	793	do.....	1890	.....	.....
<i>Moringen</i>	do.....	567	do.....	1871	.....	.....
		6,485			[150]	[\$750,000]

48. NEW YORK AND CUBA MAIL STEAMSHIP COMPANY.

<i>Niagara</i> (b).....	American.....	2,265	Iron.....	1877	65	\$198,000
<i>Saratoga</i> (b).....	do.....	2,520	do.....	1878	65	231,000
<i>Santiago</i> (b).....	do.....	2,359	do.....	1879	65	250,000
<i>Olenfuegos</i> (b).....	do.....	2,865	do.....	1883	65	268,000
<i>City of Washington</i> (b).....	do.....	2,863	do.....	1877	65	330,000
<i>Yumuri</i> (b).....	do.....	3,497	Steel.....	1890	65	420,000
<i>Orizaba</i> (b).....	do.....	3,497	do.....	1890	65	420,000
<i>Yucatan</i> (b).....	do.....	3,525	do.....	1890	65	420,000
<i>Vigilancia</i> (b).....	do.....	4,115	do.....	1890	65	475,000
<i>Seguranca</i> (b).....	do.....	4,033	do.....	1890	65	475,000
<i>Seneca</i> (b).....	do.....	2,729	Iron.....	1884	65	250,000
<i>Manteo</i> (b).....	do.....	584	do.....	1887	65	75,000
		35,152			780	3,805,000

49. KONINKLIJKE WEST-INDISCHE MAILDIENST.

Orange-Nassau.....	Dutch.....	1,304	Iron.....	1883	50	.....
Prins Maurits.....	do.....	1,304	do.....	1884	50	.....
Prins Frederik Hendrik.....	do.....	1,642	do.....	1888	50	.....
Prins Willem I.....	do.....	1,850	Steel.....	1890	50	.....
Prins Willem II.....	do.....	1,850	do.....	1890	50	.....
Prins Willem III.....	do.....	1,850	do.....	1890	50	.....
		10,100			300	[\$550,000]

50. CAMPANIA TRANSATLANTICA.

Habana.....	Spanish.....	2,678	Iron.....	1872	70	\$380,000
Ciudad Condal.....	do.....	2,595	do.....	1872	70	300,000
Mexico.....	do.....	2,112	do.....	1876	70	300,000
Panama.....	do.....	2,085	do.....	1875	70	300,000
		9,470			280	1,280,000

51. ATLAS STEAMSHIP COMPANY.

Adirondaack.....	British.....	2,167	Steel.....	1888	40	.....
Alene.....	do.....	2,239	Iron.....	1880	40	.....
Athos.....	do.....	1,944	do.....	1879	40	.....
Ailsa.....	do.....	1,957	do.....	1877	40	.....
Alvena.....	do.....	1,744	do.....	1870	40	.....
Andes.....	do.....	1,711	do.....	1865	35	.....
Alps.....	do.....	1,724	do.....	1865	35	.....
Adula.....	do.....	772	Steel and iron.....	1889	30	.....
		14,258			300	[\$700,000]

52. DOMINICAN LINE.

<i>Saginaw</i> (a).....	American.....	1,736	Iron.....	1883	40	\$150,000
<i>Geo. W. Olyde</i> (b).....	do.....	1,849	do.....	1872	40	150,000
		3,585			80	300,000

53. HAITIEN LINE.

(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
<i>Yzama</i> (a)	American.....	1,028	Iron	1881	38	\$125,000

54. NEW YORK, BERMUDA AND WEST INDIA LINE.

<i>Trinidad</i>	British	2,592	Iron	1884	55	\$300,000
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55. BAHAMAS STEAMSHIP COMPANY.

<i>Antilia</i>	British	929	Steel.....	1893	20	\$75,000
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56. WAYDELL & CO. (CHARTERERS).

<i>Sea Bellido</i>	British	1,914	Steel.....	1893	25	\$120,000
<i>Ardangosees</i>do	2,100	Iron	1881	23	60,000
<i>Ardancorrah</i> .....	.....do	1,432	Steel.....	1882	22	50,000
		5,446	.....		70	230,000

57. NEW YORK AND PUERTO RICO LINE (CHARTERED).

<i>Rannoch</i>	British	1,812	Steel.....	1889		
<i>Fort William</i> .....	.....do	1,807	.....do	1888		
		3,619	.....		[65]	[\$180,000]

58. TRINIDAD LINE (GEO. CHRISTALL).

<i>Creole Prince</i>	British	2,047	Steel.....	1893		
<i>Carib Prince</i> .....	.....do	2,048	.....do	1893		
<i>Arrawaddy</i> .....	.....do	2,622	Iron	1873		
		6,717	.....		[110]	[\$500,000]

59. QUEBEC STEAMSHIP COMPANY TO WEST INDIES.

<i>Caribbee</i>	British	1,944	Iron	1878		
<i>Fontabelle</i> .....	.....do	2,646	.....do	1882		
<i>Muriel</i> .....	.....do	2,398	Steel.....	1889		
<i>Madiana</i> .....	.....do	3,080	Iron	1876		
		10,068	.....		[200]	[\$500,000]

60. MUNSON LINE.

<i>Ardandhu</i>	British	2,091	Steel.....	1883		
<i>Ardanmhor</i> .....	.....do	2,082	.....do	1891		
<i>Ardanrose</i> .....	.....do	2,019	.....do	1894		
<i>Kong Frode</i>	Norwegian	954	.....do	1898		
<i>Banan</i> .....	.....do	978	.....do	1898		
<i>County Down</i>	British	2,210	.....do	1890		
<i>Schleswig</i>	German	1,458	Iron	1875		
<i>Breidalvik</i>	Norwegian	711	Steel.....	1890		
		12,503	.....		[250]	[\$650,000]

61. RED CROSS LINE.

<i>Miranda</i>	British	1,158	Iron	1884	33	\$125,000
<i>Portia</i> .....	.....do	1,156	.....do	1884	33	125,000
<i>Silvia</i> .....	.....do	1,704	.....		33	125,000
		4,018	.....		99	375,000

PHILADELPHIA TO GREAT BRITAIN.

1. *International Navigation Company* (American).—Passenger service (American line) once every three weeks to Liverpool; also freight service to Liverpool and British ports.

2. *Allan Line* (British).—To Glasgow, via Halifax, St. Johns, Newfoundland, and Liverpool, passenger, freight, and mail service.

3. *Johnson-Trident Line* (British).—Weekly freight service to London and Swansea.

4. *Atlantic Transport Line* (American).—Weekly freight service to London and Swansea in connection with the Johnson-Trident Line. (See also New York and Baltimore.)

PHILADELPHIA TO GERMANY.

5. *Hamburg-American* (German).—Weekly freight service from Hamburg and return, via Baltimore.

PHILADELPHIA TO BELGIUM.

[1] *International Navigation Company* (American line).—Weekly passenger and freight service to Antwerp.

PHILADELPHIA TO WEST INDIES, MEXICO, AND CENTRAL AMERICA.

6. *Earn Line* (American).—Irregular freight service (coal) to West Indian and Cuban ports and return (iron ore and sugar); sailings monthly. Average period of voyage, round trip, 4 to 5 weeks. Capital stock, \$1,000,000; incorporated under the laws of New Jersey (vessels of this line also run occasionally from Baltimore).

Munson Line (charterers).—Irregular freight service biweekly to Mexican ports. (Also tank steamers to Cuba between March and July.)

8. *H. Dumois & Co.* (charterers).—Irregular freight service (fruit) to Central American ports.

In addition to the lines given above, Philadelphia is the center of a considerable petroleum export trade to French ports and to Antwerp under the French and Belgian flags, and a considerable fruit importation trade with Central American, Cuban, and West Indian ports by means of chartered vessels, chiefly under the Norwegian flag.

1. INTERNATIONAL NAVIGATION COMPANY

[(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Ohio (b)	American	3,392	Iron	1873	.....	.....
Indiana (b)	do	3,158	do	1873	.....	.....
Illinois (b)	do	3,126	do	1873	.....	.....
Pennsylvania (b)	do	3,166	do	1872	.....	.....
Switzerland	Belgian	2,816	do	1874	.....	.....
Fennland	do	3,760	do	1870	.....	.....
Southwark	British	8,607	Steel	1893	.....	.....
Kensington	do	9,000	do	1893	.....	.....
British Princess	do	3,926	do	1882	.....	.....
Lord Gough	do	3,655	Iron	1879	.....	.....
		42,606			[1,000]	[\$2,250,000]

2. ALLAN LINE.

Siberian	British	3,904	Steel	1884	70	.....
Carthaginian	do	4,214	do	1884	70	.....
Corean	do	3,488	Iron	1881	70	.....
		11,606			210	[\$600,000]

3. JOHNSTON-TRIDENT LINE.

Enskar	British	3,093	Steel	1890	32	\$150,000
Fonar	do	3,014	do	1889	32	150,000
Holkar	do	3,278	do	1891	32	150,000
		9,385			96	450,000

4. ATLANTIC TRANSPORT LINE.

Mains	British	2,780	Steel	1887	32	\$150,000
Missouri	do	2,845	do	1880	32	150,000
		5,625			64	300,000

5. HAMBURG-AMERICAN.

Polynesia	German	2,196	Iron	1881	.....	.....
Steinhof	do	2,479	Steel	1889	.....	.....
Stubbenhuk	do	2,843	do	1890	.....	.....
Beunwell	do	2,889	do	1890	.....	.....
		10,507			[150]	[\$550,000]

6. EARN LINE.

Earnwell	British	2,013	Steel	1886	26	\$100,000
Earnford	do	2,209	do	1889	26	125,000
Earndale	do	2,283	do	1889	26	135,000
Earnwood	do	2,101	do .....	.....	26	85,000
Earncliffe	do	2,258	Iron	1881	26	90,000
		10,844			130	535,000

7. MUNSON LINE.

Centurion	British	1,942	Steel	1893	.....	.....
Cuba	Norwegian	726	Iron	1883	.....	.....
Moonstone	British	2,076	do	1889	.....	.....
		4,744			[90]	[\$225,000]

S. H. DUMOIS & CO. (CHARTERERS).

[(a) Foreign-built vessel admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Donau	Norwegian	1,452	Iron	1882	.....	.....
Jamnia	do	721	Steel	1892	.....	.....
Alert	do	783	Iron	1884	.....	.....
Wellhaven	do	678	do	1884	.....	.....
		3,634	.....	.....	[70]	[\$175,000]

PETROLEUM VESSELS

Ville de Dieppe	French	1,228	Steel and iron.	1888	.....	.....
Messina	British	1,973	Steel	1893	.....	.....
Ville de Douai	French	1,919	do	1890	.....	.....
La Heebaye	Dutch	2,539	do	1888	.....	.....
Le Lion	French	2,407	do	1893	.....	.....
		10,006	.....	.....	[150]	[\$450,000]

BALTIMORE TO GREAT BRITAIN.

1. *Atlantic Transport Line* (American).—Capital stock, \$3,000,000, nearly all American. Weekly sailings to London. Average passage, 14 days. (See also New York and Philadelphia.)

2. *Manhasset Line* (British; American owners).—Operated in connection with the North American Transport Line.

3. *Lord Line* (British).—To Belfast every 10 days. Average passage, 14 days.

4. *Bristol Channel Line* (British).—Monthly sailings to Leith and Bristol. Average passage, 14 days.

5. *Johnston Line* (British).—Freight service to Liverpool.

BALTIMORE TO GERMANY.

6. *Hamburg-American Line* (German).—Every 10 days to Hamburg. Average passage, 15 days. (See also New York, New Orleans, Philadelphia, and Boston.)

7. *North German Lloyd* (German).—Weekly sailings to Bremen. Average voyage, 12½ days. (See also New York.)

Earn Line.—(See Philadelphia.)

Red Cross Line.—(See New York for list of vessels.) Occasional freight service.

BALTIMORE TO HOLLAND.

8. *Neptune Line* (British).—Weekly freight service to Rotterdam. Round trip, 6 weeks. Capital stock, \$1,680,000.

BALTIMORE TO WEST INDIES, MEXICO, AND CENTRAL AMERICA.

9. *Buckman Fruit Company* (charterers).—Biweekly sailings to Port Antonio, Jamaica.

HIGHWAYS OF COMMERCE.

683

1. ATLANTIC TRANSPORT LINE.

(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Maryland.....	British	2,773	Steel.....	1886	40	.....
Montana.....	do	2,775	do	1887	40	.....
Michigan.....	do	3,722	do	1890	40	.....
Minnesota.....	do	3,216	do	1887	40	.....
		12,486			160	\$800,000

2. MANHANSSET LINE.

Massepequa.....	British	3,026	Steel.....	1893	30	\$160,000
Menantic.....	do	3,024	do	1893	30	160,000
		6,050			60	320,000

3. LORD LINE.

Lord Londonderry.....	British	2,409	Steel.....	1888	33	.....
Lord Lansdowne.....	do	2,753	Iron	1884	33	.....
Lord O'Neill.....	do	2,751	do	1884	33	.....
Lord Bangor.....	do	2,991	Steel.....	1890	33	.....
Lord Charlemont.....	do	3,138	do	1886	33	.....
Bengore Head.....	do	2,490	Iron	1884	33	.....
		16,532			198	\$1,000,000

4. BRISTOL CHANNEL LINE.

Govino.....	British	2,279	Iron	1882	28	.....
Prozano.....	do	2,476	Steel.....	1890	28	.....
Dago.....	do	1,914	Iron	1877	28	.....
Khlo.....	do	2,376	Steel.....	1889	28	.....
		9,045			112	\$400,000

5. JOHNSTON LINE TO LIVERPOOL.

Queensmore.....	British	3,792	Steel.....	1890	.....	.....
Parkmore.....	do	3,318	do	1890	.....	.....
Castlemore.....	do	2,868	do	1892	.....	.....
Barrowmore.....	do	3,715	Iron	1884	.....	.....
Baltimore.....	do	3,730	do	1884	.....	.....
Rossmore.....	do	4,360	Steel.....	1889	.....	.....
Sedgemore.....	do	4,332	do	1891	.....	.....
		26,115			[350]	[\$1,100,000]

6. HAMBURG-AMERICAN PACKET COMPANY.

Polynesia.....	German	2,196	Iron	1881	42	.....
California.....	do	2,690	do	1883	42	.....
Hungaria.....	do	2,036	Steel.....	1884	42	.....
Italia.....	do	3,486	do	1889	42	.....
Wandrahm.....	do	2,683	do	1891	42	.....
Remus.....	do	2,635	do	1889	42	.....
Barmen.....	do	2,614	do	1889	42	.....
		18,352			294	\$1,300,000

7. NORTH GERMAN LLOYD.

[(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
America.....	German.....	2,752	Iron.....	1863	100	\$100,000
Dresden.....	do.....	4,872	Steel.....	1888	100	500,000
Stuttgart.....	do.....	5,349	do.....	1889	100	500,000
Darmstadt.....	do.....	5,316	do.....	1890	100	500,000
Gera.....	do.....	5,319	do.....	1890	100	500,000
Weimar.....	do.....	5,318	do.....	1891	100	500,000
		28,856			600	2,600,000

8. NEPTUNE LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Urbino.....	British.....	2,412	Iron.....	1881	27	\$125,000
Ohio.....	do.....	2,389	Steel.....	1888	27	124,000
Patapsco.....	do.....	2,933	do.....	1890	28	153,000
Chicago.....	do.....	2,381	do.....	1890	27	139,200
Yenango.....	do.....	2,938	do.....	1891	28	163,200
Delano.....	do.....	2,968	do.....	1892	28	163,200
		16,021			165	873,600

9. BUCKMAN FRUIT COMPANY (CHARTERERS).

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
America.....	Norwegian.....	900	Steel.....	1890	18	\$75,000
Managua.....	do.....	730	do.....	1890	16	70,000
Culmore.....	do.....	650	do.....	1890	16	70,000
		2,280			50	215,000

BOSTON TO GREAT BRITAIN.

1. *Cunard Line* (British).—Semiweekly sailings to Queenstown and Liverpool. (See also New York.)

2. *Allan Line* (British).—To Glasgow, calling at Liverpool, Moville, Galway, and Halifax, fortnightly service. (See also Portland, Philadelphia, and New York.)

3. *Leyland Line* (British).—Freight service weekly to Liverpool. Average time of passage, 10 days.

4. *Warren Line* (British).—Freight service to Liverpool.

Wilson-Hill Line.—Fortnightly service calling at New York. (See New York.)

5. *Furness Line* (British).—Irregular freight service to Liverpool.

6. *Johnston Line* (British).—Irregular freight service to London.

BOSTON TO BELGIUM.

7. *Hamburg-American Line* (German).—(See also New York, Boston, Philadelphia, and New Orleans.)

8. *Puritan Line* (British).—Irregular freight service to Antwerp.

BOSTON TO THE BRITISH PROVINCES.

9. *Yarmouth Steamship Line* (British).—Semiweekly passenger and freight service to Yarmouth, Nova Scotia. Capital stock, \$342,000, of which a considerable amount is American.

Plant Line.—(See Tampa, Fla.)

10. *Société Saint-Pierraise de Navigation à Vapeur* (French).—Capital stock, \$82,000. Fortnightly service to Halifax and St. Pierre, Miquelon.

Fruit steamers.—There is a large import trade between Boston and West Indian and Central American ports by means of vessels, chiefly under the Norwegian flag, owned and chartered by various companies, the most prominent among which is the Boston Fruit Company.

1. CUNARD LINE.

[(a) Foreign-built vessels, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag	Gross tons.	Material.	Year built.	No. crew.	Value.
Catalonia	British	4,841	Iron	1881	.....	.....
Bothnia	do	4,535	do	1874	.....	.....
Payonia	do	5,588	do	1882	.....	.....
Cephalonia	do	5,517	do	1882	.....	.....
Scythia	do	4,557	do	1875	.....	.....
		25,088	.....	.....	[700]	[\$1,800,000]

2. ALLAN LINE.

Scandinavian	British	3,068	Iron	1870	70	.....
Nestrian	do	2,689	do	1866	70	.....
Prussian	do	3,030	do	1869	70	.....
		8,787	.....	.....	210	[\$600,000]

3. LEYLAND LINE.

Georgian	British	5,100	Steel	1890	50	\$300,000
Columbian	do	5,100	do	1890	50	300,000
Lancastrian	do	5,100	do	1891	50	300,000
Philadelphian	do	5,100	do	1891	50	300,000
Bostonian	do	4,500	do	1888	50	300,000
		24,900	.....	.....	250	1,500,000

4. WARREN LINE.

Michigan	British	4,917	Steel	1887	50	.....
Sagamore	do	5,036	do	1892	50	.....
Sachem	do	5,204	do	1893	50	.....
Norseman	do	4,442	Iron	1882	50	.....
Roman	do	4,559	do	1884	50	.....
Camboman	do	4,920	Steel	1892	50	.....
Ottoman	do	4,843	do	1890	50	.....
Angloman	do	4,892	do	1892	50	.....
Kansas	do	5,276	Iron	1882	50	.....
Palestine	do	2,987	do	1858	50	.....
		46,956	.....	.....	500	[\$2,000,000]

5. FURNESS LINE.

Stockholm City	British	2,686	Iron	1884	.....	.....
Carlisle City	do	3,002	Steel	1894	.....	.....
Burham City	do	3,092	Iron	1882	.....	.....
		8,780	.....	.....	[150]	[\$500,000]

6. JOHNSTON LINE.

[(a) Foreign built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
British Queen.....	British.....	4,388	Steel.....	1890		
British Empire.....	do.....	3,020	do.....	1889		
Nesamore.....	do.....	3,377	Iron.....	1882		
Oranmore.....	do.....	3,377	do.....	1882		
Mentmore.....	do.....	3,405	do.....	1882		
		17,568			[275]	[\$700,000]

7. HAMBURG-AMERICAN LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Steinhoff.....	German.....	2,479	Steel.....	1889		
Cremon.....	do.....	2,067	Iron.....	1871		
Markomania.....	do.....	3,470	Steel.....	1890		
Baumwell.....	do.....	2,889	do.....	1890		
Hungaris.....	do.....	2,036	do.....	1884		
		12,941			[175]	[\$850,000]

8. PURITAN LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Rialto.....	British.....	2,229	Iron.....	1878		
Otranto.....	do.....	2,379	do.....	1877		
		4,608			[80]	[\$200,000]

9. YARMOUTH STEAMSHIP COMPANY.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Boston.....	British.....	1,094	Steel.....	1890	55	\$220,000
Yarmouth.....	do.....	1,452	do.....	1887	50	140,000
		3,146			105	360,000

10. SOCIÉTÉ SAINT-PIERRAISL DE NAVIGATION À VAPEUR.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Pro Patria.....	French.....	339			22	\$100,000

FRUIT LINES.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Barnstable.....	British.....	1,356	Steel.....	1894		
Brookline.....	do.....	1,352	do.....	1894		
Ethelred.....	do.....	1,110	Iron.....	1872		
Antonio Zambrano.....	Norwegian.....	505	Steel.....	1890		
Bergenserer.....	do.....	665	Iron.....	1884		
Alfred Dumois.....	do.....	723	Steel.....	1890		
Brixham (a).....	American.....	626	Iron.....	1885		
San Domingo.....	British.....	1,087	do.....	1874		
Bratten.....	Norwegian.....	705	do.....	1878		
Usk.....	British.....	869	Steel.....	1891		
Unitas.....	do.....	598	Iron.....	1874		
City of Kingston.....	do.....	844	Steel.....	1893		
Hiram.....	Norwegian.....	602	do.....	1890		
Vale.....	do.....	745	Wood.....	1874		
Ethelwold.....	British.....	956	Steel.....	1899		
Bowden (a).....	American.....	777	Iron.....	1896		
Yutu (b).....	do.....	340	Wood.....	1891		
Bernard (a).....	do.....	918	Iron.....	1870		
		12,788			[250]	[\$700,000]

PORTLAND TO GREAT BRITAIN.

1. *Mississippi and Dominion Steamship Company* (British).—Capital stock, in round numbers, \$1,500,000, of which about \$100,000 is American. From November to March fortnightly service to Liverpool and monthly service to Bristol. Round trip, 4 to 5 weeks.

2. *Allan Line* (British).—Fortnightly passenger service to Liverpool during winter months. (See also Philadelphia, Boston, New York.)

3. *Donaldson Line* (British).—Irregular service during winter months to Glasgow.

1. MISSISSIPPI AND DOMINION STEAMSHIP COMPANY.

[(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag	Gross tons.	Material.	Year built.	No. crew.	Value.
Vancouver.....	British.....	5,231	Iron.....	1884	100	\$389,600
Labrador.....	do.....	4,737	Steel.....	1891	100	38,600
Oregon.....	do.....	3,672	Iron.....	1882	70	194,800
Sarnia.....	do.....	3,694	do.....	1882	70	194,800
Toronto.....	do.....	3,316	do.....	1886	65	121,750
Dominion.....	do.....	3,176	do.....	1873	40	121,750
Ontario.....	do.....	3,175	do.....	1874	40	121,750
		27,001			485	1,534,050

2. ALLAN LINE.

Parisian.....	British.....	5,359	Steel.....	1881	70	
Mongolian.....	do.....	4,750	do.....	1891	70	
Numidian.....	do.....	4,750	do.....	1891	70	
Laurentian.....	do.....	3,983	Iron.....	1872	70	
		18,812			280	[\$1,500,000]

3. DONALDSON LINE.

Amarynthia.....	British.....	3,953	Steel.....	1891		
Aleides.....	do.....	3,345	do.....	1895		
Warwick.....	do.....	2,527	do.....	1882		
		9,805			[125]	[\$700,000]

EASTPORT, ME.

International Steamship Company (American).—Passenger service, three round trips per week to Boston, St. Johns, New Brunswick, via Eastport; via Portland, Me., every other trip. Capital stock, \$300,000; chiefly American.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Cumberland (b).....	American.....	1,606	Wood.....	1885	50	\$200,000
State of Maine (b).....	do.....	1,410	do.....	1881	50	170,000
New Brunswick (b).....	do.....	925	do.....	1860	40	20,000
		3,941			140	390,000

NEWPORT NEWS, VA.

Chesapeake and Ohio Steamship Company, Limited (American).—Capital stock, \$1,250,000; in part owned by the Chesapeake and Ohio Railway. Freight service every 10 days to London and Liverpool. Usual period of voyage, 12 to 14 days.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
<i>Rappahannock</i>	British	3,883	Steel	1893	38	\$250,000
<i>Shenandoah</i>	do	3,883	do	1893	38	250,000
<i>Kanawha</i>	do	3,883	do	1893	38	250,000
<i>Appomattox</i>	do	2,874	do	1893	33	170,000
<i>Chickahominy</i>	do	2,874	do	1893	33	170,000
<i>Greenbrier</i>	do	2,874	do	1893	33	170,000
		20,251			211	1,360,000

SAVANNAH, GA.

Antwerp Naval Stores Company (Belgian).—Monthly freight service to Antwerp. Period of voyage, about 20 days.

(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
<i>Iris</i>	Belgian	2,333	Steel	1893	30	[\$140,000]

NEW ORLEANS TO GREAT BRITAIN.

1. *West India and Pacific Steamship Company* (British).—Passenger and freight service to Liverpool 5 times a month during winter months; 3 times a month during summer months. Average voyage, 17 days; returning via Kingston, Colon, Central American and West Indian ports to New Orleans.

2. *Harrison Line* (British).—Regular freight service to Liverpool direct; also return via West Indies and Mexican ports.

3. *Cuban Steamship Line* (British).

NEW ORLEANS TO FRANCE.

4. *Chargeurs Réunis* (French).—Every 20 days to Havre.

NEW ORLEANS TO MEDITERRANEAN PORTS.

5. *Pinillos Line* (Spanish).

NEW ORLEANS TO WEST INDIES, MEXICO, AND CENTRAL AMERICA.

6. *Arthur Caron & Co.* (charterers).—Weekly freight service (fruit) to Boca del Toro.

7. *J. L. Phipps & Co.* (charterers).—Freight service (fruit) fortnightly to Costa Rican ports.

8. *Southern Pacific Company* (American).—Passenger and freight service weekly to Havana via Florida ports every 9 days to Brazos, Santiago, and varying service to Bluefields.

9. *Macheca Brothers* (Royal Belize Mail Steamship Company).—Mail and passenger service to British Honduras; also freight service (fruit) to Central American ports.

10. *Oteri Lines*, to Central American ports.

NEW ORLEANS TO GERMANY.

11. *Hamburg-American Line* (German).—Irregular service to Hamburg.

In addition to regular lines a large export grain trade is carried on from New Orleans in chartered vessels to various European ports, one firm loading annually 75 steamships, mainly British, averaging 3,000 registered tons each; average number of crew, 28; average value of steamers, \$125,000. The steamers vary so that no regular list is possible. A large fruit import trade is also conducted by chartered vessels, mainly Norwegian.

1. WEST INDIA AND PACIFIC STEAMSHIP COMPANY.

[(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Barbadian	British	4,105	Steel	1893	44	\$300,000
Bernard Hall	do	2,600	Iron	1880	40	150,000
Costa Rican	do	3,117	Steel	1885	42	250,000
Cuban	do	4,202	do	1891	40	280,000
Floridian	do	3,257	Iron	1884	42	250,000
Jamaican	do	4,501	Steel	1893	44	300,000
Louisianian	do	3,642	do	1891	44	280,000
Mexican	do	4,202	do	1891	40	280,000
Nicaraguan	do	3,642	do	1891	44	280,000
Texas	do	3,183	Iron	1883	42	280,000
West Indian	do	2,704	Steel	1891	40	250,000
William Cliff	do	3,287	do	1888	42	250,000
Yucatan	do	2,753	Iron	1882	40	200,000
		45,195			544	3,350,000

2. HARRISON LINE.

Astronomer	British	3,006	Iron	1883		
Chancellor	do	4,637	Steel	1891		
Electrician	do	2,847	do	1887		
Engineer	do	2,591	Iron	1882		
Governor	do	2,554	do	1881		
Inventor	do	2,222	do	1878		
Legislator	do	2,902	Steel	1888		
Navigator	do	2,510	do	1886		
Orion	do	3,242	do	1889		
Professor	do	2,522	Iron	1881		
Traveller	do	2,966	Steel	1888		
Vesta	do	3,055	Iron	1881		
Wanderer	do	4,086	Steel	1891		
		39,400			[450]	[\$2,200,000]

3. CUBAN STEAMSHIP LINE.

[(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Cayo Romano.....	British.....	2,685	Steel.....	1893		
Cayo Rapado.....	do.....	2,700	do.....	1894		
Cayo Mono.....	do.....	2,758	do.....	1893		
		8,141			[125]	[860]

4. CHARGEURS REUNIS.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Concordia.....	French.....	2,925	Steel.....	1889	40	\$200,000
Colonia.....	do.....	2,925	do.....	1889	40	200,000
Cananas.....	do.....	3,242	do.....	1893	40	200,000
		9,029			120	\$600,000

5. PINILLOS LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Catalina.....	Spanish.....	5,000	Steel.....	1893		
Conde Wilfredo.....	do.....	3,355	do.....	1889		
Martin Saenz.....	do.....	3,574	do.....	1890		
Miguel M. Pinillos.....	do.....	3,291	do.....	1885		
Pio IX.....	do.....	4,029	do.....	1887		
		19,449			[330]	\$1,100,000

6. ARTHUR CARON & CO. (CHARTERERS).

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Breifond.....	Norwegian.....	445	Iron.....	1890	14	
Agnes.....	do.....	432	do.....	1889	14	
Iberia.....	do.....	514	do.....	1891	14	
		1,391			42	\$81,000

7. J. L. PHIPPS & CO.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Yumuri.....	Norwegian.....	844	Steel.....	1890	16	\$80,000
Henry Dumois.....	do.....	1,032	do.....	1890	20	100,000
Albert Dumois.....	do.....	1,058	do.....	1891	22	100,000
Foxhall (a).....	American.....	843	do.....	1885	26	100,000
		3,777			84	\$380,000

8. SOUTHERN PACIFIC COMPANY.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Clinton (b).....	American.....	1,187	Iron.....	1862	27	
Wm. G. Hewes (b).....	do.....	1,118	do.....	1865	27	
Gusnie (b).....	do.....	998	do.....	1872	27	
Whitney (b).....	do.....	1,338	do.....	1871	30	
Aransas (b).....	do.....	1,167	do.....	1877	30	
Algiers (b).....	do.....	2,294	do.....	1876	60	
Morgan City (b).....	do.....	2,299	do.....	1876	60	
		10,391			261	\$500,000

9. MACHECA BROS. LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Breakwater (b).....	American.....	1,065	Iron.....	1890		
City of Dallas (b).....	do.....	915	Wood.....	1872		
Olearwater.....	British.....	1,147	Steel.....	1894		
Rover (a).....	American.....	725	Iron.....	1881		
Stillwater (a).....	do.....	1,020	Steel.....	1883		
Shearwater.....	British.....	920	do.....	1888		
Wanderer (b).....	American.....	539	Wood.....	1879		
Goldsworthy (a).....	do.....	106	Iron.....	1881		
		6,437			[150]	[830,000]

10. S. J. OTERI LINE.

(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
<i>Prof. Morse</i> (a).....	American.....	1,025	Steel.....	1866		
<i>S. Pizzati</i> (b).....	do.....	1,027	Wood.....	1868		
<i>S. Oteri</i> (a).....	do.....	900	Iron.....	1881		
<i>Joseph Oteri, jr.</i> (a).....	do.....	484	do.....	1878		
		3,436			[80]	[\$150,000]

11. HAMBURG-AMERICAN LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
<i>Thernskia</i>	German.....	3,372	Steel.....	1890		
<i>Polonia</i>	do.....	2,925	do.....	1889		
<i>Fremon</i>	do.....	2,067	Iron.....	1871		
<i>Wrasbrook</i>	do.....	2,067	do.....	1882		
<i>Wolsatia</i>	do.....	1,867	do.....	1880		
<i>Kehrweider</i>	do.....	2,893	do.....	1871		
<i>Stubenhuk</i>	do.....	2,943	Steel.....	1890		
<i>Walesia</i>	do.....	2,333	Iron.....	1882		
		20,467			[350]	[\$900,000]

PENSACOLA TO WEST INDIES, MEXICO, AND CENTRAL AMERICA.

Export Coal Company (chartered vessels).—Irregular freight service (coal) to Havana, Vera Cruz, and Tampico. Capital stock, \$227,000; all American capital.

EXPORT COAL COMPANY.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
<i>Ceythian</i>	British.....	240	Steel.....	1885	13	\$20,000
<i>Amethyst</i>	do.....	1,357	Iron.....	1878	22	45,000
<i>Leutonia</i>	do.....	2,376	do.....	1881	29	75,000
<i>Lector</i>	do.....	2,040	do.....	1887	27	40,000
		6,013			91	180,000

TAMPA TO WEST INDIAN PORTS.

Plant Line (American).—Capital stock, \$1,000,000. Biweekly to Havana during the summer; during the winter, weekly from Boston to Halifax.

PLANT STEAMSHIP LINE.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
<i>Mascotte</i> (b).....	American.....	900	Iron.....	1885	46	\$200,000
<i>Olivette</i> (b).....	do.....	1,600	do.....	1887	50	300,000
<i>Florida</i> (a).....	do.....	1,600	Steel.....	1887	40	175,000
<i>Halifax</i>	British.....	1,738	do.....	1888	50	175,000
		4,938			186	850,000

SAN FRANCISCO TO CHINA AND JAPAN.

1. *Pacific Mail Steamship Company* (American).—Capital stock, \$20,000,000. Express and passenger mail service to Yokohama and

Hongkong, occasionally calling at Honolulu. Average period of round trip, 7 weeks. (See also New York.)

NOTE.—The company also has lines connecting Panama with Mexican and Central American ports, not touching the United States.

2. *Occidental and Oriental Steamship Company* (British).—Express, passenger, and mail service, alternating with Pacific Steamship Company's lines.

SAN FRANCISCO TO PANAMA.

[1.] *Pacific Mail Steamship Company* (American).—Express, passenger, and mail service, connecting, via Panama Railroad, with Atlantic service to New York.

3. *Panama Steamship Line* (American).—Chartered by the Panama Railroad Company. Express, passenger, and mail service, connecting via Panama railroad, with Columbian Line, New York.

SAN FRANCISCO TO BRITISH COLUMBIA AND ALASKA.

4. *Pacific Coast Steamship Company* (American).—Capital stock \$2,000,000. Passenger and freight service 3 times a month to Alaska. Usual period of voyage, 14 days.

To British Columbia and Puget Sound: Passenger and freight service every 5 days. Usual period of voyage, 11 days.

To Ensenada, Mexico: Monthly passenger and freight service.

SAN FRANCISCO TO HONOLULU, AUSTRALIA, AND NEW ZEALAND.

5. *Oceanic Steamship Company* (American).—Express, passenger, and mail service 3 times a month to Honolulu; once a month to New Zealand and Australia.

1. PACIFIC MAIL STEAMSHIP COMPANY.

[(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
CHINA AND JAPAN.						
<i>City of Peking</i> (b).....	American.....	5,090	Iron.....	1874	.....	\$637,930
<i>City of Rio de Janeiro</i> (b).....	do.....	3,548	do.....	1878	.....	543,844
<i>Peru</i> (b).....	do.....	3,528	Steel.....	1892	.....	656,471
<i>China</i>	British.....	4,940	do.....	1889	.....	780,958
TO PANAMA.						
<i>Acapulco</i> (b).....	American.....	2,572	Iron.....	1873	.....	368,555
<i>City of Sydney</i> (b).....	do.....	3,017	do.....	1875	.....	463,880
<i>Colima</i> (b).....	do.....	2,906	do.....	1473	.....	438,510
<i>Colon</i> (b).....	do.....	2,686	do.....	1873	.....	401,500
<i>San Blas</i> (b).....	do.....	2,075	do.....	1862	.....	318,540
<i>San Jose</i> (b).....	do.....	2,081	do.....	1862	.....	317,100
<i>San Juan</i> (b).....	do.....	2,076	do.....	1862	.....	320,370
PANAMA, MEXICO, AND CENTRAL AMERICA.						
<i>Barracouta</i>	British.....	1,659	Steel.....	1883	.....	254,200
<i>City of Panama</i> (b).....	American.....	1,490	Iron.....	1873	.....	234,750
<i>Costa Rica</i> (b).....	do.....	1,783	do.....	1891	.....	249,000
<i>Starbuck</i> (a).....	do.....	2,157	do.....	1881	.....	318,000
		41,598			[1,500]	6,486,364

2. OCCIDENTAL AND ORIENTAL STEAMSHIP COMPANY.

[(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Gaelic	British	4, 206	Steel.....	1885		
Belgie	do	4, 212	do	1885		
Oceanic.....	do	3, 808	Iron	1870		
		12, 226			[350]	[\$900, 000]

3. PANAMA STEAMSHIP LINE (P. R. R. CO., CHARTERERS).

Return (b)	American.....	2, 268	Iron	1890		\$200, 000
Progreso (a)	do	1, 919	Steel.....	1885		175, 000
		4, 187			[100]	375, 000
Keeweenaw (b).....	do	2, 511	Steel.....	1891	[50]	[250, 000]

4. PACIFIC COAST STEAMSHIP COMPANY.

City of Puebla (b)	American.....	2, 624	Iron	1881	77	\$300, 000
Umatilla (b)	do	3, 070	do	1881	81	350, 000
Walla Walla (b)	do	3, 070	do	1881	81	350, 000
City of Topeka (b)	do	1, 057	do	1884	44	92, 500
Queen (b)	do	2, 728	do	1882	103	375, 000
Saint Paul (b)	do	888	do	1875	26	85, 000
		13, 437			422	1, 552, 500

OCEANIC LINE.

Alameda (b)	American.....	3, 158	Iron	1883		
Australia (a)	do	2, 755	do	1875		
Mariposa (b)	do	3, 159	do	1883		
Monrovia	British	3, 433	Steel.....	1890		
Zealandia.....	Hawaiian.....	2, 489	do	1875		
		14, 994			[450]	[\$1, 500, 000]
DUNSMUIR LINE.						
Oosta Rica.....	Nicaraguan...	1, 983	Iron	1875	[35]	[80, 000]
CHANDLER LINE.						
Empire (b).....	American.....	732	Wood.....	1873	[20]	[30, 000]

PORT TOWNSEND (TACOMA, PORT OF CALL).

Northern Pacific Steamship Company (British).—Connected with the Northern Pacific Railroad. Passenger and freight service once in 3 weeks to Hongkong, Shanghai, Kobe, and Yokohama.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Tacoma.....	British	2, 550	Iron	1870	53	
Sikh.....	do	2, 672	Steel.....	1889	53	
Victoria.....	do	3, 167	Iron	1870	53	
		8, 389			159	[\$400, 000]

SAN DIEGO.

Lower California Development Company (British).—Capital stock \$1,700,000. Six trips monthly to Ensenada and St. Quentin.

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
Manuel Dublan.....	Nicaraguan...	436	Wood.....	1898	20	\$25,000
Carlos Pacheco.....	do.....	172	do.....	1895	16	25,000
		608			36	\$50,000

LOS ANGELES.

Occasionally to British Columbia.

[(a) Foreign-built vessel, admitted to American registry; (b) built in the United States. Figures in brackets [] are approximate.]

Name.	Flag.	Gross tons.	Material.	Year built.	No. crew.	Value.
<i>Mineola</i> (a).....	American.....	2,438	Steel.....	1887	40	\$200,000

REGISTERED STEAM VESSELS OF THE UNITED STATES.

Following is a complete list of the registered steam vessels of the United States which have not been included in the foregoing compilation, except 57 steamers (chiefly wooden) of less than 100 tons each, aggregating 4,000 gross tons. These ply chiefly on Puget Sound, the Mexican border, and are registered merely on account of the proximity of foreign territory. They are mainly ferryboats rather than vessels engaged in foreign trade in the broad sense of the word.

Of the vessels tabulated below, many, though registered, have been engaged in coastwise trade, and thus were not returned as means of regular communication between the United States and foreign countries; others are steam whalers on the Atlantic and Pacific, and others, though retaining, of course, their registers, have not been in trade during the year. Others have been one or two voyages to the West Indies, but have not been regularly employed in foreign trade. It is possible that three or four have been regularly employed in foreign trade to the West Indies, Mexico, etc., and were omitted in the replies of owners to the request of the Bureau for information on which the foregoing tabulation was based.

Name.	Tons.	Material.	When built.	Where built.
oston, Mass.:				
Carroll.....	1, 372	Wood.....	1862	New York, N. Y.
Morning Star.....	471	do.....	1884	Bath, Me.
Worcester.....	1, 332	do.....	1841	New York, N. Y.
ew Bedford, Mass.:				
Navarch.....	494	do.....	1892	Bath, Me.
ew York, N. Y.:				
Atrato.....	156	do.....	1879	Boston, Mass.
Britannia.....	115	do.....	1879	Newburg, N. Y.
Rescue.....	153	do.....	1883	Philadelphia, Pa.
Alamo.....	2, 942	Iron.....	1883	Chester, Pa.
Clyde.....	2, 016	do.....	1870	Philadelphia, Pa.
Concho.....	3, 724	Iron and steel.....	1891	Chester, Pa.
El Paso.....	3, 531	Iron.....	1884	Philadelphia, Pa.
El Monte.....	3, 531	do.....	1886	Do.
Lampasas.....	2, 942	do.....	1883	Chester, Pa.
Neptune.....	2, 880	do.....	1873	England.
Chalmette.....	2, 982	do.....	1879	Philadelphia, Pa.
Excelsior.....	3, 263	do.....	1882	Wilmington, Del.
Mount Waldo.....	324	Wood.....	1886	Bath, Me.
Orinda.....	112	do.....	1884	Camden, N. J.
hiladelphia, Pa.:				
Gladsfern.....	110	Iron.....	1883	Do.
Bolivar.....	234	do.....	1885	Philadelphia, Pa.
Tampico.....	134	do.....	1885	
orfolk, Va.:				
South Portland.....	622	do.....	1883	England.
harleston, S. C.:				
Herbert.....	157	Wood.....	1884	Rocky Hill, Conn.
ensacola, Fla.:				
Carbonera.....	361	Iron.....	1890	Camden, N. J.
ew Orleans, La.:				
B. D. Wood.....	151	do.....	1892	Philadelphia, Pa.
Morgan.....	994	do.....	1865	Wilmington, Del.
New York.....	2, 309	do.....	1875	Do.
W. G. Willmot.....	150	Steel.....	1892	West Bay City, Mich.
Mabel Comeaux.....	160	Wood.....	1883	New Richmond, Ohio.
alveston, Tex.:				
Pearl Rivers.....	106	do.....	1878	Gainesville, Miss.
rownsville, Tex.:				
Santiago.....	168	Iron.....	1881	St. Louis, Mo.
ogales, Ariz.:				
Gila.....	236	Wood.....	1872	San Francisco, Cal.
Mohave.....	188	do.....	1875	Do.
an Diego, Cal.:				
Santa Fe.....	164	Wood.....	1888	San Diego, Cal.
au Francisco, Cal.:				
Bertha.....	614	do.....	1888	Benicia, Cal.
Crescent City.....	296	do.....	1882	San Francisco, Cal.
Dora.....	218	do.....	1890	Do.
Haytian Republic.....	1, 089	do.....	1885	Bath, Me.
Jessie H. Freeman.....	516	do.....	1883	Do.
Jeamie.....	1, 071	do.....	1883	Do.
Jeanette.....	290	do.....	1893	Benicia, Cal.
Karluk.....	294	do.....	1894	Do.
Mary D. Hume.....	164	do.....	1881	Ellensburg.
Newport.....	281	do.....	1875	San Francisco, Cal.
Santa Maria.....	344	do.....	1884	Do.
Yaquina.....	355	do.....	1881	Portland, Oreg.
Baluga.....	508	do.....	1882	Bath, Me.
Balaena.....	528	do.....	1883	San Francisco, Cal.
Grampus.....	326	do.....	1886	Do.
Narwhal.....	523	do.....	1883	Do.
Orca.....	628	do.....	1882	Do.
Thrasher.....	512	do.....	1883	Bath, Me.
El Primero.....	102	Steel.....	1893	
Belvedere.....	440	Wood.....	1880	Do.
William Baylies.....	380	do.....	1886	
Willamette.....	2, 562	Iron.....	1881	Chester, Pa.
astoria, Oreg.:				
Chilcat.....	142	Wood.....	1890	Astoria, Oreg.
ort Townsend, Wash.:				
City of Quincy.....	195	do.....	1878	Willamette, Oreg.
Columbia.....	529	do.....	1891	Little Dallas, Wash.
Cyrus Walker.....	241	do.....	1884	San Francisco, Cal.
Edith.....	198	do.....	1882	Do.
Eliza Anderson.....	275	do.....	1859	Portland, Oreg.
Evangel.....	164	do.....	1882	Seattle, Wash.
Favorite.....	269	do.....	1868	Utaladdy, Wash.
Garland.....	101	do.....	1890	Port Townsend, Wash.
Goliath.....	235	do.....	1849	New York, N. Y.
Geo. E. Starr.....	472	do.....	1879	Seattle, Wash.
Island Belle.....	207	do.....	1892	Ballard, Wash.
Idaho.....	278	do.....	1880	Cascade, Wash.

Name.	Tons.	Material.	When built.	Where built.
Port Townsend, Wash.—Continued.				
J. E. Boyden.....	102	Wood.....	1888	Seattle, Wash.
Mogul.....	123	do.....	1896	Tacoma, Wash.
Mabel.....	156	do.....	1889	Seattle, Wash.
Monticello.....	226	do.....	1892	Ballard, Wash.
Politkofsky.....	255	do.....	1886	Sitka, Alaska.
Richard Holyoke.....	181	do.....	1877	Seabeck, Wash.
Rainier.....	103	do.....	1877	Seattle, Wash.
Rapid Transit.....	164	do.....	1891	Port Hadlock, Wash.
Rosalie.....	318	do.....	1893	Alameda, Cal.
S. L. Mastic.....	213	do.....	1869	Port Discovery, Wash.
State of Washington.....	605	do.....	1889	Tacoma, Wash.
Skagit Chief.....	345	do.....	1887	Do.
Tacoma.....	239	do.....	1876	San Francisco, Cal.
Tyel.....	316	Wood.....	1884	Port Ludlow, Wash.
Utopia.....	423	do.....	1893	Do.
Wm. F. Munroe.....	181	do.....	1883	Seattle, Wash.
W. K. Merwin.....	229	do.....	1883	Do.
Washington.....	292	do.....	1881	Vancouver, Wash.
Wanderer.....	212	do.....	1890	Port Blakeley, Wash.
Wasco.....	280	do.....	1887	Hood River, Oreg.
Yakima.....	173	do.....	1874	Port Gamble, Wash.
Fleetwood.....	184	do.....	1881	Portland, Oreg.
Flyer.....	427	do.....	1891	Do.
North Pacific.....	488	do.....	1871	San Francisco, Cal.
Sehome.....	692	do.....	1889	Portland, Oreg.
Signal.....	475	do.....	1887	North Bend, Oreg.
Willapa.....	333	do.....	1891	Portland, Oreg.
City of Kingston.....	1,117	Iron.....	1884	Wilmington, Del.
City of Seattle.....	1,411	do.....	1890	Philadelphia, Pa.
Pioneer.....	160	do.....	1878	Do.
Sea Lion.....	185	do.....	1884	Camden, N. J.
Sitka, Alaska:				
Alaskan.....	155	Wood.....	1886	Seattle, Wash.

APPENDIX B.

DUTCH GUIANA.¹

RAILWAYS AND HIGHWAYS.

There are no railroads whatever in this colony, and there are very few good roads. All the internal communication is by water. Transporting of produce from the estates is done by lighters carrying from 15 to 20 tons; these lighters are also used in carrying supplies to the various estates.

* COASTWISE AND INTERIOR LINES.

A small steamer, run by the Colonial Government, plies between Paramaribo and the estates up the Surinam and Commewyne rivers, a distance of about 60 miles. There is also another Government steamer plying between the Saramaca River and Paramaribo weekly, a distance of 50 miles.

There are three launches, owned by private parties, running from Paramaribo, about 80 miles, to Buschland, the entrance to the gold fields. These launches carry passengers and tow freight boats.

The Colonial mail steamer *Curaçao* leaves Paramaribo twice a month for Demerara, British Guiana, via Nickerie and Coronie, districts of

¹ Received too late for insertion at its proper place.

this colony. The steamer connects at Demerara with the royal mail steamer from Europe, via Barbados, and also brings the correspondence from the United States and the various West India islands. A new steamer is expected this year, when the connection will be made at Barbados instead of Demerara.

OCEAN LINES.

Royal West Indian Mail (Koninklijke West Indische Mail Dienst).—This is a stock company formed in Amsterdam and subsidized by the Dutch Government. Steamers sail every three weeks from Amsterdam direct to Paramaribo; thence to New York, via Demerara, British Guiana; Trinidad, Carupano, Cumana, Guanta, La Guayra, and Porto Cabello in Venezuela; Curacao, Jacmel, Aux Cayes, and Port au Prince, in Haiti. They return to Paramaribo from New York over the same route and go from Paramaribo via Havre to Amsterdam. These steamers carry through mails to the United States and Europe.

The line consists of six steamers, viz:

Name.	Tonnage.	Name.	Tonnage.
Prins Willem I.....	1,950	Prins Willem IV.....	1,950
Prins Willem II.....	1,950	Prins Frederik Hendrik.....	1,600
Prins Willem III.....	1,950	Prins Maurits.....	1,300

The boats are all nearly new and in good condition, and, with the exception of the *Prins Maurits*, are fitted with electric light.

The passenger rates are \$80 to New York, and the rate of freight is from \$6 to \$8 per ton delivered in New York.

Compagnie Générale Transatlantique.—This company has a branch line for West Indian service. The steamer which goes through to Colon meets at Martinique, West Indies, an annex steamer which proceeds to Cayenne, French Guiana, via St. Lucia, Trinidad, Demerara, and Paramaribo, arriving at the latter place about the 28th of each month; returning, the annex arrives at Paramaribo on the 4th of the following month, returning by the same route, carrying mails and passengers for Europe.

The annex steamers are the *Venezuela*, of about 800 tons, and the *St. Domingue*, of about 800 tons. These steamers take neither passengers nor freight to the United States.

Scrutton's Direct Line (London steamers).—This line consists mostly of chartered vessels, leaving London, via Dartmouth, England, about once a month for this port via Demerara and Berbice, British Guiana, returning by the same route. The steamers carry freight and passengers to Europe and the ports mentioned in British Guiana; they take no freight or passengers to the United States.

Trinidad Line (George Cristall & Co., New York, proprietors).—Steamers leave New York about every two weeks for Trinidad, via

Grenada. At Trinidad an annex steamer takes freight and passengers to this port and Demerara. These steamers carry through mails from the United States.

The steamers from New York are, at present, the *Irrawaddy*, of 2,600 tons, and the *Gulf of Akaba*; the *Bratten*, of 800 tons, is used on the annex.

Passenger rate to New York is \$80; round trip, \$140; to Trinidad, \$25, and to Demerara, \$10.

Freight on cocoa to New York is \$7 per ton, and on sugar according to market. The rate from New York is estimated at 50 cents per dry barrel.

This line expects some new steamers, which will come direct from New York to this port, returning to New York via Demerara and Trinidad.

ELI VAN PRAAG,
Vice-Consul.

PARAMARIBO, June 15, 1895.

APPENDIX C.

SPAIN.¹

RAILWAYS.

The Spanish railway lines are controlled by corporations. The most important are: (1) The Northern Railway Company, (2) the Madrid-Zaragoza-Alicante Railway Company, (3) Andalusian Railway Company, (4) Madrid, Caceres and Portugal Railway Company, (5) the Tarragona, Barcelona and France Railway Company, and (6) the Algeciras (Gibraltar) Railway Company, Limited.

The condition of the Spanish railway lines is rather unsatisfactory both with regard to the comfort and the safety of passengers. There are three classes of passenger cars. The first class may be compared, as far as comfort is concerned, with the second-class French car.

In consequence of a collision which took place at Quintanilleja, on the Northern line, about three years ago, the Government issued a royal decree ordering all railway lines to use vacuum brakes on all passenger trains running at a speed of 50 kilometers (31 miles) per hour, and alarm electric bells. Only express trains reach this speed, as a general rule, but it frequently happens that ordinary passenger trains being behind time, exceed this speed in order to make up lost time. On the Northern Railway line vacuum brakes are attached to express trains only. On the Madrid, Alicante and Zaragoza line they are used both on express and ordinary trains (mail).

¹ Received too late for insertion at its proper place.

As to the alarm electric bells, the railway companies have failed as yet to carry out the Government decree.

All Spanish railways have only one track.

From Madrid to the French frontier (Hendaye), one express train runs daily during the winter season and two during the summer (July, August, and September). From Madrid to Corunna, Gijon, Santander, and Bilbao one express train runs daily. On the Madrid, Zaragoza and Alicante line there are one daily express train and one extra express train three times a week. On the Madrid, Caceres and Portugal line there is one daily express train. The European International express runs three extra express trains per week. From Paris the train leaves for Madrid on Mondays, Wednesdays, and Saturdays, and for Lisbon on Wednesdays and Saturdays.

With respect to the freight on the Northern line, the rates range from 0.12 to 0.3 peseta per ton per kilometer (0.62137 mile). On the Madrid, Alicante, Zaragoza and Barcelona line the rates range from 0.15 to 0.4 peseta per ton per kilometer.

With regard to railroads overcoming great obstacles, a list of the tunnels and bridges on the Northern Railway line and on the Andalusian Railway is given herewith.

On the Madrid-Trun line, the highest station is La Canada, 1,359 meters (4,459 feet) above the level of the sea, situated at 92 kilometers (57.17 miles) from Madrid, the altitude of which is 595 meters (1,953 feet). On the Madrid, Leon and Gijon line, there is a station called Busdongo, the altitude of which is 1,197 meters (3,927 feet), being 117 kilometers (72.7 miles) distant from Gijon, the grade between both stations, Gijon and Busdongo, being 10.20 meters per kilometer (33.46 feet per 0.62137 mile).

Distances to termini and main points touched.

NORTHERN RAILWAY SYSTEM.

[NOTE.—Parallel lines indicate terminal points of divisions and branches.]

From Madrid to—	Distance.	Fare.	From Madrid to—	Distance.	Fare.
	<i>Kilometers.</i>	<i>Pesetas.</i>		<i>Kilometers.</i>	<i>Pesetas.</i>
Alar	415	48.95	Miranda	453	52.10
Reinosa	448	53.50	Orduña	517	59.50
Santander	503	61.10	Doa Caminos	551	63.40
			Bilbao	557	64.10
Segovia	101	11.65	Segovia	101	11.65
Palencia	284	32.70	Medina	186	22.00
Orense	691	76.50	Burgos	363	41.75
Vigo	823	91.68	San Sebastian	614	70.65
			Hendaye	633	72.80
Palencia	284	32.70	Leon	407	46.85
Lugo	716	82.40	Gijon	578	64.55
Corunna	831	83.00			

Tunnels—Continued.

NORTHERN RAILWAY SYSTEM—Continued.

[NOTE.—1 kilometer=0.62137 mile; 1 meter=39.37 inches.]

Name of tunnel.	Length.	Name of tunnel.	Length.
Galicia line—Continued.	<i>Kilom. met.</i>	Galicia line—Continued.	<i>Kilom. met.</i>
No. 26	1 007	Congostinas Loda	1 822
No. 28	0 246	Orris	1 061
No. 29	0 220	Batan	0 305
No. 30	0 307	El Padrun	1 726
No. 33	0 584	Calayo	0 703
Cobas	0 718	Freano	0 427
Perido	0 317	Robledo	0 898
Atalea	0 483	Santander line:	
Bustelos	0 278	Negro	0 296
Peña del Burro	0 230	Gustazoso	0 351
Quereño	0 349	Moran (Cotio)	0 222
La Barja	0 223	Hijando	0 242
Pedreiras	0 300	Pujayo	0 593
Monteaforado	0 402	San Lorenzo	0 270
San Roman	0 310	Las Lioas	0 245
Rajros	0 220	Somathos	0 298
Cobas	0 534	Castajon-Bilbao line:	
San Pedro de Lor	0 235	No. 1	0 375
De Casti	0 211	No. 2	0 203
La Marquesa	0 418	No. 3	0 984
Treiras	0 995	Alsasua-Zaragoza-Barcelona line:	
Cuatro	0 254	Lastanosa	0 827
Oural	1 963	Segur	0 259
San Alberto	0 223	San Pedro	0 203
La Tisira	0 229	Segues	0 424
Selros	0 234	Santamans	0 432
Pasajes	0 424	Manresa	0 364
Congostinas	1 168	Grande de Torellat	0 608
Royazos	0 220	Lerida-Tarragona line:	
Las Cruces	0 385	No. 1	0 733
Bustiello	0 889	Barcelona-San Juan de las Abadesas line:	
Coerada	0 223	Escala	0 427
Valdehaces	0 285		

ANDALUSIAN RAILWAYS.

Malaga-Cordova line (123 miles):		Malaga-Cordove line—Continued.	
Boabdilla-Gobantes	0 358	Rio Frio-Laja (3 tunnels), longest	0 160
Gobantes-El Chorro (11 tunnels), longest	0 839	Marthena-Cordova line (56.54 miles):	
Alora-Pizarra	0 189	Gudaleazer-Valchillon	0 327
Cordova-Balamzona (4 tunnels), longest	0 315	Puente Genil Linaves (109.36 miles):	
Obajo-Alhondiquilla (3 tunnels), longest	0 230	Cabra-Da Mencia	0 140
		Torre Don Jimeno-Torredel Campo	0 334

Bridges.

NORTHERN RAILWAY.

Leon Gijon line: Across the Caudal, the Nalon, and the Nora.

Zaragoza-Alsasua line: Across the Ebro, the Aragon, and the Imperial Canal.

Zaragoza-Barcelona line: Across the Gallego, the Cinca, the Segre, and the Llobregat.

Lerida-Tarragona line: Across the Franioli.

Madrid-Iron line: Across the Duero and the Oyzarzun.

Segovia-Medina line: Across the Eresma, the Voltoya, and the Adaja.

Palencia-Coruña line: Across the Sil (4), the Burbia, the Neira, the Tordia, and the Miño (a viaduct), the Ladra, and the Parga (2).

ANDALUSIAN RAILWAYS.

Lines.	Number of bridges.	Length.	Over the—
Malaga-Cordova (123 miles):			
Malaga-Valchillon	1	<i>Meters.</i> 204	Guadalquivir.
Valchillon-Torres	1	64	La Torrecilla.
Cabrera	2	35, 45	Fuensequilla.
Cabrera-Munoz	1	58	Las Arcas.
Puente Genil-Casarriba	1	133	Genil.
Bobadilla-Gobantes	1	42	Vad Yeso.
Gobantes-El Chorro	2	39, 69	Mellizas.
Alora-Pizarra	1	83	Pizarra.
Cordova-Belmez (44.11 miles):			
Cordova-Ballenzona	1	152	Puente Pedruche.
Obeja-Alhondiguilla	1	24	Do.
Villa Nueva del Rey-Cabeza Vaca	1	25	Do.
Bobadilla-Granada (75.8 miles):			
Salinas-Rio Frio	2	a 90	Rio Frio.
Illora-Pinos Puente	1	20	Do.
Pinos Puente-A tarfe	1	22	Do.
Sevilla-Jerez-Cadiz (102 miles):			
Sevilla-Dos Hermanos	1	36	Guadalquivir.
Puerto Santa Maria-Puerto Real	1	158	Gudaleta.
Do	1	114	San Pedro.
Puerto Real-San Fernando	1	66	Borcadel Ave y el Aguila.
Do	1	99	Sante Petri.
Alora-Utrera-Osuna (57.80 miles):			
Empalune-A tachal	1	20	
Marchena-Ojuelos	2	17, 25	
Osuna-La Roda (21.75 miles):			
Aguadulce-Pedreira	1	35	
Marchena-Cordova (56.55 miles):			
Guadalcazar-Valchilla	1	50	
La Carlota-Guadalcazar	2	50, 20	
Alicante-Murcia-Torrevieja (55.9 miles):			
Alicante-Santa Pola	1	45	Aguas Amargas.
Elche-Cuvillante	3	16, 24, 75	Vinalapa.
Calosa-Orchuela	1	40	Segura.
Beniel-Zenata	1	30	Regueron.
Albaterria-Benjopar	1	40	Segura.
Puente Genil-Linares (109½ miles):			
Lucena-Cabra	1	70	Alameda.
Labra-D ^a Mencia	2	25, 130	El Mayor La Seina.
D ^a Mencia-Alcandeta	2	83, 205	Guadajos and Desgara- dero.
Alcandeta-Vado Jaen	2	70, 70	Espinda and Vadeju- dio.
Do	1	222	Vivora.
Vadojaen-Martes	2	130, 206	Sierrayuelo and Sala- do.
Torre Don Jimeno-Torre del Campo	2	80, 102	Arrojuelo and Caba- llier.
Espeitim-Bailen			Guadalquivir.

a Longest.

Difficulties of construction.—The Andalusian railways which have overcome great obstacles are the following:

The Cordova-Malaga line, on account of its numerous tunnels, bridges and works across the Gaitanes Mountains, between Gobantes and Alora; the Bobadilla-Granada line, and also that of Cordova-Belmez; and the Puente Genil-Linares line.

Dates of inauguration.

Line.	Date opened.	Line.	Date opened.
Cordova-Malaga line:		Sevilla Jerez-Cadiz line—Cont'd.	
Cordova-Malaga	Sept. 16, 1863	Time consumed in building	
Alora-Cordova	Aug. 15, 1865	line, eight years.	
Time consumed in building		Utrera-Moron-Osuna line:	
line, four years.		Moron-Marchena	Oct. 8, 1868
Cordova-Belmez line:		Marchena-Osuna	Apr. 17, 1875
Cordova-Alhondiguilla	Nov. 18, 1870	Utrera-Moron	Sept. 12, 1884
Alhondiguilla-Obeja	July 11, 1875	Time consumed in building	
Obeja-Cordova	Sept. 5, 1875	line, one year.	
Time consumed in building		Osuna-La Roda line.....	Feb. 24, 1878
line, three years.		Time consumed in building	
Bobadilla-Granada line:		line, one year.	
Bobadilla-Antequera	Aug. 20, 1865	Marchena-Cordova line:	
Loja-Granada	Dec. 10, 1866	Marchena-Elja	Sept. 20, 1879
Antequera-La Peña	Aug. 14, 1869	Elja-La Carlota	June 10, 1885
La Peña-Loja	Nov. 8, 1863	La Carlota-Vachillon	Oct. 12, 1885
Time consumed in building		Time consumed in building	
line, seven years.		line, one year.	
Jerez to San Lucar and Bonanza:		Alicante-Murcia Torrevieja line...	June 18, 1884
Jerez-Alcubilla	Oct. 2, 1878	Time consumed in building	
Alcubilla-San Lucar	Sept. 1, 1877	line, two and one-half years.	
San Lucar-Bonanva	Sept. 12, 1884	Puente Genil-Linares line:	
Time consumed in building		Espeluy-Jaen	Aug. 18, 1881
line, one year.		Puente Genil-Cabra	June 18, 1891
Sevilla-Jerez-Cadiz line:		Cabra-Jaen	Jan. 22, 1893
Jerez-Puerto Santa Maria	June 22, 1856	Espeluy-Linares	Do.
Puerto Santa Maria-Trocadero	Oct. 10, 1856	Time consumed in building	
Sevilla-Jerez	May 1, 1880	line, one year; other part of	
Puerto Real-Cadiz	Mar. 1, 1861	line, six years.	
Cordova-Sevilla	Sept. 29, 1861		

F. FIGUEROA HERNANDEZ,

Vice-Consul.

MADRID, July 30, 1895.

APPENDIX D.

NEW TARIFF RATES OF AUSTRIAN STATE RAILWAYS.¹

In former dispatches to the Department, I have explained what is called the zone system, the operation of which has been attended with remarkable success on the Hungarian railways, and it may be of some interest to know that the Austrian State railways have also made some reduction of rates and have recently adopted a new tariff scheme on that system in which the rates on second-class goods have been lowered to even less than those of the Northwestern Railway. It contains three classes, as follows:

Distance.	Class—		
	1.	2.	3.
0.62137 to 93.2 miles:			
Express train	Florins. * 5.25	Florins. 3.25	Florins. 1.75
Ordinary train	3.75	2.25	1.25
93.8 to 186.4 miles:			
Express train	5.15	3.15	1.65
Ordinary train	3.65	2.15	1.15
187 to 372.8 miles:			
Express train	5.00	3.00	1.50
Ordinary train	3.50	2.00	1.00
Over 372.8 miles:			
Express train	4.80	2.80	1.30
Ordinary train	3.30	1.80	.80

* 1 florin = 40 cents United States currency.

¹ Received too late for insertion at its proper place.

The calculation is based on the zone system. The first zone is formed by a distance of 10 kilometers (6.2 miles). From 10 to 50 kilometers (6.2 to 31 miles) the zones are formed by 5-kilometer (3.1 miles) divisions; over 50 kilometers, however, each zone is 10 kilometers (6.2 miles) long. The stamp duty is charged separately; it amounts to 2 kreutzers¹ per florin (40 cents), at the highest being 25 kreutzers for one ticket. In the first zone there are stipulated minimum prices; hence the journey up to 10 kilometers (6.2 miles) costs 12 kreutzers in the third class, 23 kreutzers in the second class, and 38 kreutzers in the first class carriages, exclusive of stamp duty.

The distance between two stations is found by the kilometer table.

In the transportation of goods, there is to be added a slight supplementary charge by mountain railways and railways of expensive construction, and it is unnecessary to make unit tariffs on these railway lines.

The new tariff is to go into operation on September 1, 1895.

EDWARD P. T. HAMMOND,

Consul.

BUDAPEST, July 9, 1895.

APPENDIX E.

INTERIOR WATERWAYS OF NORTHWEST EUROPE.²

In a report previously published, the principal harbors located on the North Sea and English Channel were described.³ Every one of the cities mentioned, Hamburg, Bremen, Amsterdam, Rotterdam, Antwerp, Havre, and others, is the terminus of a network of railways, rivers, and canals. A large share of the merchandise shipped abroad from these ports is transported by water from the place of origin to the side of the ocean steamer. Rivers and canal systems are the commercial highways of Continental Europe. These water routes still maintain their prestige, chiefly by reason of their economic advantages, while the comparatively short distances to be traversed are also in their favor.

A knowledge of the principal rivers and canals, upon which so many goods destined for our country commence their journey, should be valuable. Not only may such a description give an idea of European transportation facilities and charges, but it also should serve as an aid to the perfection of our own system. It is, therefore, with peculiar pleasure that I have just read a book upon this subject published by a

¹ 1 krentzer equals two-fifths of a cent.

² Received too late for insertion at its proper place.

³ See "North Sea and Channel ports," published in Consular Reports, No. 170, January, 1895.

civil engineer of this city. The author, Mr. Octave Mavaut, gives a succinct account of transportation facilities by water in France, Holland, Germany, and Belgium. I will review, as briefly as possible, the salient features of this treatise.

FRANCE.

France is certainly the country where the Government has intervened most liberally in favor of interior navigation. The works executed upon navigable waterways since 1880 have cost the sum of \$87,000,000, and the relinquishment of the tolls represents also an annual sacrifice of several millions. It is interesting to note that the French Government has not done anything except to transform and improve the existing waterways. Of the 7,660 miles of navigable waterways which France possesses at present, there are scarcely 70 miles of canals recently constructed. Among them, however, we must mention the canal from the Oise to the Aisne, which greatly facilitates the relations between eastern France and Alsace-Lorraine, on the one hand, and northern France and Dunkirk on the other. The commercial importance of the various navigable ways is far from equal; indeed, 3,500 miles of the so-called principal water courses absorb more than 90 per cent of the total mileage traffic.

CANALIZATION OF THE SEINE.

The most considerable work of all this period has been the canalization of the lower Seine from Paris to Rouen, which has cost in round figures \$11,600,000. This great work has only recently been completed by the construction of the canal from Tancarville to Havre, which has cost \$3,860,000. The object has been to obtain at all times a depth of $10\frac{1}{2}$ feet, affording shipping an available draft of 9 feet 11 inches, while establishing the necessary arrangements for active and easy navigation.

In the 155 miles which separate Paris from Rouen there have been constructed nine stations with removable and movable dams for the drainage of superfluous water, as well as locks to insure in ordinary times the regularity of navigation. At each dam there is a large lock affording in the sluice an available length of $462\frac{1}{2}$ feet and a width of $55\frac{3}{4}$ feet, and also a smaller lock affording in its sluice an available length of $136\frac{1}{2}$ feet and a width of $28\frac{1}{2}$ feet. The results of these works are already considerable; for in five years—from 1886, the year of their completion, until 1891—the annual traffic on the lower Seine has increased from 217,000,000 to 399,000,000 “mile-tons.”¹

¹This expression “mile-ton” means the carriage of 1 ton over the distance of 1 mile. We should be careful, however, not to understand it as meaning a certain number of tons per mile. For instance, 399,000,000 mile-tons does not mean that number of tons carried per mile; that figure is, on the contrary, the product of the total number of tons of merchandise multiplied by the total length of the distance

The character of the boats and their means of propulsion have likewise been transformed. Besides the ordinary canal boats, which carry, at the maximum, 300 tons, specially large barges up to 1,000 tons in size have been constructed. Steam is exclusively employed for navigation; it alone operates the very complete output of towboats, using chains and magnetic adherent cables, as well as the tugs and coasting boats, which are in regular communication with London.

One remarkable feature of the lower Seine navigation is the regularity and swiftness of transportation. In this respect there are boats between Paris and Rouen which compete with the railway.

The price of freight between Rouen and Paris was, in 1890, upstream, 71½ cents per ton, and downstream, 51½ cents per ton.

IMPROVEMENT OF THE RHONE.

The improvement of the Rhone from the junction of the Saone at Lyons to the sea has been undertaken with an entirely different idea. Over a distance of 205 miles the improvement of the open river has been accomplished by a series of works wisely conceived and accurately executed. Before the works were commenced, in 1880, the minimum low-water mark was 15¾ inches. During 182 days of the year only did the available draft exceed 63 inches, within which time there were included 101 days during which it was more than 78.7 inches.

After twelve years of persevering efforts and an expenditure of \$9,000,000, the following results have been obtained: The channel has been corrected; the falls have been lengthened, lessening the impetuosity of the rapids; dangerous rocks have been removed; the minimum draft now measures 55 inches, and there is an available draft of 63 inches during at least 354 days, and more than 78.7 inches during 310 days of the year. The only obstacle which the Rhone still presents to navigation arises from the violence of the current. It is hoped to remedy this by establishing a series of relays, fitted out with special tugs, drawn upstream by cables, to be wound around fixed drums operated by steam power. These cables would unwind for boats going downstream, and would allow an easy traction power, from which the best results are expected. The day, therefore, is soon coming when the Rhone, which seemed unconquerable, will be easily navigable, and will have an immense traffic.

The navigation of the Rhone is destined to immediately serve very important local interests. It is, moreover, impossible to estimate the importance of this route for international traffic. The Rhone, suitably

traversed. Thus, if the total of goods transported amounted to 5,500 tons and the distance carried was 50 miles, we should have a mile-tonnage of 275,000 tons. This definition should be borne in mind wherever the phrase appears in the course of this report. The original expression employed in French is "tonne-kilométrique." Mile-ton is the nearest equivalent phrase, the necessary reduction from kilometer to mile having been made.

connected on the one hand with Marseilles by a direct canal, and on the other with the navigable water courses of France, Belgium, and Germany, may be destined to become the principal commercial artery of northwestern Continental Europe for connection with the countries of the Mediterranean, the Indian Ocean, and the Far East.

DEVELOPMENT OF FRENCH CANALS.

The works executed upon the French canals, being almost exclusively in the line of improvement, appear comparatively modest alongside of the great improvement of the Seine and Rhone. The change accomplished in the last fifteen years, however, is not less considerable, and is in proportion with the hundreds of millions which have been devoted to that purpose. The object has been to reduce all canals of general importance to one single type, so as to render them practicable for the largest boats in use on French canals. The type of boat which predominates is the Flemish pinnace, or Walloon boat, of 300 tons. Its dimensions are: Length, 126 feet; width, $16\frac{1}{2}$ feet; draft, loaded, $5\frac{1}{2}$ feet. Boats of this type figure for 80 or 90 per cent of the total upon the northern and eastern canals. To permit the passage of these boats the sluices measure in available space: Length, 126 feet; width, 17 feet. The legal dimensions of the great French canals are not less than $32\frac{3}{8}$ feet in width at the bottom, $52\frac{1}{2}$ in width on the water surface, and $6\frac{1}{2}$ feet draft.

In 1878 only 288 miles of canals satisfied these conditions. In 1893 there were 1,353 miles. Such were especially all the canals of northern and eastern France. For a great many canals, moreover, these measurements have been increased, by reason of the importance of their traffic. Thus the canal from the Oise to the Aisne has a width of $32\frac{3}{8}$ feet at the bottom and a draft of $7\frac{1}{2}$ feet. The Scheldt Canal has a width of 36 feet at the bottom and a draft of $7\frac{1}{2}$ feet. The St. Quentin Canal, whose depth is the same, has a width of $39\frac{1}{8}$ feet. Upon certain canals the traffic is enormous. There pass, for instance, over the St. Quentin Canal, on an annual average, 3,500,000 tons of merchandise, and in some parts exceptionally frequented as much as 3,800,000 tons. The total annual traffic, therefore, for this single canal amounts to about 300,000,000 mile-tons, which is equal to almost half of the total traffic of all the Belgian waterways united. The traffic per mile is about 5,000,000 tons. The St. Quentin Canal has a length of 58 miles and 35 locks. At its summit-level pond there are two subterranean passages, 3,609 and 18,700 feet in length. There is, moreover, a series of narrow passages in cuttings, with curves of short radius and great angular development. In order to meet the exigencies of such an important traffic upon canals where navigation is very difficult, the authorities have established a series of intelligent and practical regulations. Upon the northern and eastern canals and canalized rivers towage by hand power is prohibited for loaded boats,

and tolerated for empty boats only on condition that it be done by men of the crew. Towage on canals is mostly done by horses. On certain canals, as on the canal parallel to the Oise, private companies are established which furnish horses at a fixed price and by contract. On other canals, as on the St. Quentin Canal, the authorities have organized the towage along the canal and let it out to contractors upon certain stipulated conditions and by public adjudication. Finally, public authority itself operates the mechanical traction in use upon certain summit-level ponds which present exceptional difficulties for navigation. In this manner chain towage is operated on the summit-level pond of the St. Quentin Canal, on that of the canal connecting the Marne with the Rhine, in the tunnel of Ham, situated on a branch of the canalized Marne, and on the middle scarp in the Douai passage. The Government is about to establish the system of funicular towage invented by Maurice Levy upon the Aisne-Marne canal, in the Mount Billy tunnel near Reims. Last year it inaugurated, with remarkable success, electric towage—Pouilly system—upon the summit-level lake of the Bourgogne Canal, which includes a tunnel 10,829 feet in length.

Let us not forget the abolition of tolls voted in 1880; then the full importance of the works and useful measures decreed by the French Government in favor of the development of interior navigation will be easily understood. The latter has already largely profited by the favors which have been granted it.

From 1,247,095,000 mile-tons, which represented in 1880 the transportation movement upon French navigable waterways, the figures have risen to 2,117,400,000 mile-tons in 1891, while the price of freight per ton and per mile has dropped to three-tenths of a cent, and even less for long distances.

HOLLAND.

Interior navigation has not so great an importance in any other country as in Holland. There the boat is the predominant factor in transportation. Besides the admirable network of rivers which pass through the country, innumerable artificial navigable ways thread it. The system of canals for navigation has alone a development of 2,244 miles, while all the railway lines have only a total length of 1,511 miles.

It is, however, to be remarked that this system of navigable ways branches out very slightly into other countries; its connections do not extend beyond such communications as are established by the Rhine, the lower Scheldt, and the Bois le Duc-Maestricht Canal. The last, indeed, only supplements the navigation of the Meuse.

To maintain an influential commercial situation and to consolidate the sources of native activity, the country has applied a large portion of its means to the development of its shipping and seaports. Rotterdam and Amsterdam claim to handle almost exclusively the important maritime trade originating in the rich industrial regions adjacent to

the valley of the Rhine. The improvement of navigation toward and upon the Rhine forms an essential part of the programme; the present situation has been attained only after long and laborious work.

NAVIGATION FROM ROTTERDAM TO THE RHINE.

The Rhine, coming from Germany, crosses the Dutch frontier near Lobitts. About 6 miles lower down it divides into two branches, of which the more important in respect to navigation, the Wahal, passing by Nimeguen and Eich, mingles with the Meuse at Wondrichsem, 58 miles from the frontier. From their point of junction the Wahal and the Meuse continue, under the name of Meerwede, to Hardinxveld, several miles lower down, where there is another separation of their waters. The lower Meerwede flows on to Dordrecht, and from there to Rotterdam under the name of the Old Meuse and the "North;" the new Meerwede serves only as a great artificial drainage way to conduct the waters toward the Hollandsch Diep, where they pass under the well-known bridge of Moerdyk.

The course of the Rhine, including the Wahal and the Meerwede, has undergone important transformations. Instead of an irregular water course—strewn with islets and sand banks, presenting a series of shoals and deceptive channels, very often affording at low water only a depth of 1 meter or less—there now exists one of the most beautiful navigable ways to be seen. Its normal width is 1,180 to 1,312 feet, and the depth at low water, which will be increased everywhere to at least 9 feet 10 inches, is already 8 feet 10 inches, even when the depth registered on the bank at Cologne is only 5 feet, an event which occurs, on the average, not more than ten days in the year. The width of the navigable channel is 328 to 492 feet. The Meerwede has to-day a depth of 9 feet 8 inches or more to Dordrecht, and beyond the depth continues to increase to Rotterdam.

The works of improvement projected are chiefly the fixing of a minor bed by means of submerged piles and dredgings for the establishment of the channel. These improvements have cost, for the Upper Rhine, \$569,871.10; for the Wahal, \$5,028,788.70; for the Meerwede, \$4,786,400, and for the Old Meuse, the North, the Mollegat, and the Spree, \$1,002,152, which make a total sum of nearly \$11,500,000. Other expenses are still to be incurred for finishing and consolidating the improvements heretofore made. Important dredgings and supplementary works at St. Andre are especially in view. In order to prevent any mixture of the waters of the Meuse with those of the Wahal, there is projected a new drainage course destined to carry off the water of the Meuse into Hollandsch Diep. In this manner navigation from Rotterdam to the Rhine will not be influenced by the changes in the Meuse; the ice floes which come down at the breaking up of this river will likewise be diverted from Rotterdam. From this description it

is seen that the Dutch are not neglecting any means of increasing the advantages and facilities of navigation between Rotterdam and the German ports of the Rhine.

NEW CANAL OF THE MEERWEDE.

Amsterdam, which has made for its port as many sacrifices as Rotterdam, had for a long time good communication with the Rhine by the Cologne Canal. This navigable way, formed by a series of special canals, the last of which was constructed in 1825, placed Amsterdam in communication with the Lek and the Meerwede. Its total length was 52 miles; the width at the bottom measured $42\frac{1}{2}$ feet, and the depth was 8 feet. It was practicable for Rhine boats measuring 220 feet in length, $24\frac{1}{2}$ feet in width, and having a draft of 6 feet 10 inches.

For several years past, as is well known, the dimensions of the Rhine boats have been increasing. They now frequently reach 266 feet in length and $34\frac{1}{2}$ feet in width, with a draft of $8\frac{1}{2}$ feet, their tonnage being 1,500 metric tons. A barge has recently been constructed at Slikkeveer which is $285\frac{1}{2}$ feet in length and $35\frac{3}{4}$ feet in width, with $8\frac{1}{2}$ feet draft and a carrying capacity of 1,750 metric tons.

In these conditions the Cologne Canal was considered insufficient, and has been replaced by the new canal from Amsterdam to the Meerwede. The greater part of the canal—from Amsterdam to the Lek, over a distance of 29 miles—is entirely new. On the other hand, the portion between the Lek and the Meerwede is a transformation of the former Cologne Canal. By the new canal the distance from Amsterdam to the Meerwede has been reduced to 44 miles. In certain portions of the canal the level is variable, but it offers always at the least a draft of 10 feet. The width at the bottom is at least $65\frac{1}{2}$ feet. The locks of Utrecht, Vreeslyk, Vianen, Heenenhoek, and the Meerwede are $393\frac{3}{4}$ feet long and $39\frac{1}{4}$ feet wide. The twin locks of Amsterdam are 46 feet wide. This superb canal cost \$8,106,000; it was opened for traffic May 1, 1893.

DEVELOPMENT OF TRAFFIC.

The daily increasing importance of navigation between the Dutch maritime ports and the German ports of the Rhine amply justifies the considerable sacrifices which Holland is making to improve its communications with this latter river.

According to observations made at the German frontier station of Emmerich, the total trade with Holland and Belgium showed a movement, in 1881, of 26,803 boats, of which 17,894 were under the Dutch flag; in 1892, of 38,024 boats, of which 30,694 bore the Dutch flag. The 38,024 boats of 1892 represented an available tonnage of 11,975,389 cubic yards.

The traffic by the Rhine between Germany and Holland alone included a movement of 4,654,370 tons of merchandise in 1890 and of 5,423,418 tons of merchandise in 1893, an increase of 769,043 tons.

During the same years the traffic by water between Germany and Belgium amounted to 1,165,456 tons of merchandise in 1890 and 1,310,033 tons of merchandise in 1893 being an increase of only 144,577 tons of merchandise.

GERMANY.

THE GERMAN RHINE.

The Rhine is probably the most important interior waterway of Germany. Considering the relations with Dutch and Belgian ports, the total traffic of the Rhine attained in 1892 the figure of 20,793,000 tons of merchandise, of which total 16,480,000 tons represented interior transportation alone. In 1882 the total traffic was only 10,150,000 tons. The traffic therefore doubled in ten years.

In Germany the public works for the improvement of the Rhine are aiming to obtain between Mannheim and St. Goar an available depth of 6 feet 6½ inches; between St. Goar and Cologne, a depth of 8 feet 2½ inches, and below the last-mentioned city a depth of 9 feet 10 inches at the time when low water marks there only 4 feet 11 inches. Above Mannheim up to Strasburg there is only an available depth of 4 feet 4½ inches to 4 feet 11 inches, and sometimes, at low water, even less. Rhine boats are now frequently running with partial cargoes up to Strasburg. In this case they still carry from 300 to 600 tons of merchandise. With much less difficulty, small boats can ascend the Rhine as far as Hunningen, at the gates of Basel.

Towing by steam apparatus placed on the banks is organized between Bonn and Bingen, while steam-tug towing, which every day is on the increase, is strongly competing with it. The prices of tug towing upstream do not exceed on the average \$0.00875 to \$0.009 per ton for every mile. The fleet which carries on the traffic of the Rhine counts to-day 8,248 boats, of which number 7,530 are ordinary boats, representing a tonnage of 1,531,284, and 738 are steamers, whose total tonnage is 32,204. The value of this fleet is estimated at \$4,632,000, and it employs a force of 21,678 men as crews.

One remarkable feature connected with the navigation of the Rhine is the development and perfect outfitting of the ports which are established along its route. Of forty-one ports of some importance, twenty-eight are connected with railways and provided with all the appliances necessary to expedite the transshipment of merchandise from boats to cars and vice versa. In respect to management and appliances, the ports of Ruhrort, Dusseldorf, Cologne, Mayence, Mannheim, and Frankfort on the Main have not any reason to be envious of the most modern seaports. Quays, sheds, warehouses, cranes, granaries with elevators, and silos for grain, separate establishments provided with tanks for petroleum—everything exists to facilitate traffic and reduce to a minimum the cost of handling and warehousing. The construction of

the Rhine ports is, however, rather difficult by reason of the variations in the level of the river, which sometimes rises 18 to 22 feet, as most of the basins and floating docks are in free communication with the river. The wharves and talus are of costly construction. Besides, the basins and protected places must be large enough to serve as places of refuge during great floods and the breaking up of ice. These circumstances, as well as the occurrence of very low water, prevent or at least seriously hinder navigation on an average during thirty-seven days per year.

THE ELBE.

Interior navigation is also thoroughly organized on the Elbe, which, together with its tributary, the Moldau, forms to-day a navigable way of 483 miles. Since the completion of the task of rectification the Elbe contributes greatly to the prosperity of the port of Hamburg. At low water the swiftness of the current varies from $1\frac{1}{2}$ to 7 feet per second, and increases to 10 to $11\frac{1}{2}$ feet per second at high navigable water. Even in this latter case the draft of boats can not exceed 4 feet 6 inches, while at low water the possible draft is reduced to 21 inches on the Austrian portion, and does not amount to more than $31\frac{1}{2}$ inches between Magdeburg and the junction of the Havel, above Hamburg.

In spite of the unfavorable conditions, the average price of freight per ton per mile is only \$0.00388 upstream and \$0.00291 downstream. The boats in use are as much as 197 to 230 feet in length and 28 to $32\frac{3}{4}$ feet in width, with a capacity of 15,900 to 26,500 cubic feet. Traction is supplied by means of chains from the banks or by steam tugs. Steam-boats, known as "Express transports," carry 150 to 200 tons of merchandise and tow a barge of 200 to 250 tons. They cover the distance of 392 miles between the Austrian frontier and Hamburg in three days; in ascending the stream, they require eight or nine days. The rectified Oder and the canal uniting the Oder and the Elbe, which is 143 miles in length, with 25 locks, and follows partially the course of the Spree, constitute beautiful navigable ways in spite of their shallow draft. The lock of Mühlendamm, 377 feet in length and $31\frac{1}{2}$ feet in width, was opened last year. Its completion brought to a conclusion the improvements in the Berlin section, for which the municipality contributed nearly \$2,000,000. Boats of 500 tons can now circulate between the Elbe, the Spree, and the Oder.

THE NEW PRUSSIAN CANALS.

Besides the rivers and canals of the March, of which we have just spoken, and the North Sea and Baltic Canal, recently opened, North Germany does not possess any artificial navigable way of importance. As other countries have done, Prussia has presumed upon the economic value of railways. It has been found necessary that railways should carry a large car of coal from Westphalia to Bremerhaven for \$10.13—which, for distances of 186 to 279 miles, only amounts to \$0.0038825 per ton per mile—and it was not until industry was forced to demand rates below the cost of working the railways that the necessity was

recognized of completing the economic system of the country by the establishment of a well-arranged series of canals. The programme of these works is drawn up and the period of construction has commenced. We are accustomed to see the Germans, after they have adopted a programme, bring to its execution a thoroughly scientific spirit, combined with perseverance and real patriotism. Apt to profit from the experience of others, they know how to give to their creations a remarkable degree of perfection and common sense. The examples which they have furnished in this respect in the organization of their great industries, in the management of their ports, in the creation of their powerful merchant marine, are once more displayed in the construction of a system of navigable ways, recognized as necessary to the industrial and economical expansion of their Empire.

This programme aims principally to connect with each other the great natural arteries of the Rhine, the Weser, and the Elbe. In the beginning, it suffices to open an economic navigable route between the industrial regions of Westphalia and the German ports of the North Sea by the construction of a canal from Dortmund to Emshafen, a project now under full headway.

THE DORTMUND-EMSHAFEN CANAL.

The distance from Dortmund to Emshafen will be $158\frac{1}{2}$ miles. Strictly speaking, the canal extends only from Dortmund to Meppen. From Meppen to Emden the course of the Ems is to be canalized for this purpose. The canal will have a width of $98\frac{1}{2}$ feet at the water level and 59 feet at a depth of $8\frac{1}{2}$ feet below the level. In the excavated sections the bed is provisorily fixed at this depth of $8\frac{1}{2}$ feet under the water line, but in the embanked sections the cunette is deeper; the bed is $11\frac{1}{2}$ feet under the water level, and even there a width of 46 feet is maintained. The available dimensions of the locks are: Length, 240 feet; width, 28 feet 2 inches. The miters are placed at a depth of 9 feet 10 inches under the water level. With this depth the canal will be practicable for boats carrying 600 tons, and if later it should be deepened so as to employ the entire capacity of the locks, it will receive boats of 700 to 800 tons.

The difference in level between the canal at Dortmund and the North Sea at Emden is 228 feet. This fall is overcome to the extent of 81 feet by a plunge elevator of the Gruson system, established 10 miles from Dortmund, and by nineteen sluice locks scattered throughout the entire length of the canal. These locks will all be provided with hydraulic-pressure operating gear, which will considerably hasten the operation of gates and sluices.

THE DORTMUND-RHINE CANAL.

The canal from Dortmund to the Ems, which a branch prolongs to Herne, is to be continued to the Rhine in such a manner as to connect Ruhrort and Duisburg with Emshafen. At Bevergern, situated

almost halfway between Ruhrort and Emshafen, the great central canal diverges. This will extend to Magdeburg and will establish the junction between the Rhine, Weser, and Elbe.

It is proposed to commence very soon the section from Herne to the Rhine. The distance is only 25 miles, but in this all the difficulties are accumulated. The section passes through the busiest industrial region of Westphalia, and lively rivalries have developed among the great metallurgic and coal companies respecting its route. This latter is rendered most difficult by reason of the declivity of the country, as well as by the permeability of the ground in the zone of the mining concessions.

In order to pass from the Rhine to the summit-level pond, whose water level is $183\frac{1}{2}$ feet above the North Sea, there have been constructed two locks of $16\frac{1}{2}$ feet fall, and two Gruson plunge elevators, with a fall of $32\frac{1}{2}$ and 46 feet respectively. The section of the canal and the constructive works will have the same dimensions as in the canal from Dortmund to the Ems. The industries of Westphalia are still, however, urging upon the Government to enlarge these dimensions so as to permit the passage of the large Rhine boats. They ask that the locks may be 279 feet in length and $34\frac{1}{2}$ feet in width. The expense of construction of this section of the canal is estimated at \$10,000,000.

THE RHINE-WESER-ELBE CANAL.

The central canal, as we have said, diverges midway from the Ruhrort-Emshafen Canal. It will have a length of 224 miles between Bevergern and Magdeburg. This canal is destined not only to have an important transit trade, but also to serve a very large local traffic between Osnabrück, Minden, Hanover, Peine, Brunswick, and Magdeburg. According to the present plan of construction, there will be only four locks and one elevator. The cities mentioned which are not immediately on the main canal will be connected by branches. These will be extended to Osnabrück, Hildesheim, Peine, and Brunswick. The dimensions of the locks and the constructive works will be the same as in the Dortmund-Ems Canal. All known improvements and appliances will be installed to expedite navigation and facilitate traffic. The expense is calculated at \$3,475,000.

SOUTH GERMANY AND ALSACE-LORRAINE.

In South Germany and Alsace-Lorraine efforts are likewise being made to develop the means of economical water transportation. The canalization of the Main was finished in 1888 as far as Frankfort, over a distance of 22 miles. The draft, previously only $2\frac{3}{4}$ feet, has been increased to 8 feet $2\frac{1}{2}$ inches. The locks constructed in 1886, with a length of 279 feet and a width of $34\frac{1}{2}$ feet, have been lengthened. They are now 804 feet long. The expense of canalization, supported

by the Government, amounts to \$2,000,000, while the city of Frankfort has expended \$1,640,000 for the preparation and outfitting of its port. The traffic, which in 1886, the year of the inauguration of the port, was 156,000 tons, had in 1891 increased to 577,000 tons.

Much is said of the canalization of the Moselle, which is the principal tributary of the Rhine. Canalized already above Metz, it would be transformed in its lower portion—180 miles in length—into a beautiful, practicable waterway, navigable for large Rhine boats. The proposed locks would have a length of 279 feet, a width of 32½ feet, and a draft of 8 feet 2 inches. The expense is estimated at \$3,570,000, but appears small in comparison with the economic results which are expected. On the other hand, an improvement in the navigability of the Rhine itself above Spire up to Strasburg will probably be accomplished in a short time. The canals of Alsace Lorraine will then be placed in direct communication with the great navigation of the Rhine. These canals, 269 miles in length, have not undergone any modification since 1870. By its insufficiency the waterway system of Alsace-Lorraine formed a gap among the French canals. This need the German Government has undertaken to fill. It may be expected that within three years the Alsace-Lorraine canals will have the usual dimensions and constructive works of French canals, so that they will be practicable in their entirety for large inland boats.

NORTH SEA AND BALTIC CANAL.

Any description of this important waterway would be superfluous here,¹ as all its details have so lately been described in popular and technical journals upon the occasion of its inauguration in June last, that its general features are familiar to the public.

¹A brief description has already been given in this series of reports under the heading "Germany."

Mr. Jackson, Secretary of the United States Embassy at Berlin, in a dispatch dated July 18, states that the customs regulations for the canal, officially named the Kaiser Wilhelm Canal, have been agreed upon by the federal council. He adds: The semi-official newspapers state that according to these regulations neither articles which are customs free, if in unbroken packages, nor those on which duty is to be paid may be discharged or loaded on board, except at such places as are designated as landing places, without special permission from the customs authorities. A ship going from a foreign port, or from a port of the lower Elbe, to the sea may pass through the canal without any customs inspections, if in charge of a pilot, or if the boat by which she is being towed has a pilot on board, if she make the necessary customs declaration and carries during the trip, which must be without interruption, a designated customs signal. Steamers in charge of pilots, which are to pass through the whole canal without stopping, need not make a declaration if they carry the customs signal. In such cases the inspection of vessels bound for Kiel or Neumühlen takes place at Holtzenau. The pilots of ships leaving the canal at Brunsbüttel may not leave the ships until the Elbe pilots come on board. Ships carrying the customs signal must continue their voyage without unnecessary delay and without altering their cargo, and must refrain from any unauthorized communication with the shore or with other ships, except with regard to sending telegrams, or where it is necessary

BELGIUM.

The geographical and economic resemblances which exist between Belgium, Holland, and France are too great not to have occasioned the same needs and the same methods of transportation. Belgium is accordingly liberally provided with navigable ways.

The length of the Belgian system measures 1,229 miles, of which 730 miles are navigable for boats of 300 tons. In France there are 2,555 miles of canals of this class. The greater proportion of Belgian canals is, however, old, and the period of great works may be considered as closed. The canals from Brussels to Willebroeck, from Louvain to the Rupel, from Ghent to Terneuzen, from Ghent to Bruges, from Brussels to Charleroi, and from Maestricht to Bois-le-duc, the canalized Sambre, the greater part of the coal canals, and numerous canals of minor importance were constructed before 1830.

THE MEUSE.

The most important work executed since 1830 has been the canalization of the Meuse. From the cannon foundry below Liege to the French frontier the distance is 70 miles, and the minimum draft obtained is 6 feet 10½ inches. The section from Liege to Namur, executed from 1853 to 1867, includes eight locks of 186 feet in available length and 29 feet 6 inches in width, as well as three large locks like those of the section between Namur and the French frontier. This latter section was finished in 1880, and comprises nine locks of 328 feet in available length and 39½ feet in width. The entire work cost nearly \$5,000,000. Large boats frequenting the Meuse have a tonnage of 2,500 to 2,800 cubic feet.

THE MEUSE-SCHELDT CANAL.

Supplementary to the canalized Meuse, there was constructed in 1860 the canal from the junction of the Meuse to the Scheldt, with a branch to Bocholt on the canal already existing between Liege, Maestricht, and Bois le Duc. The canal from Bocholt to Antwerp is 53½ miles in length, with a draft of 6 feet 10½ inches and a width of 32¾ feet on the bottom. The locks, numbering seventeen, have a length of 164 feet and a breadth of 23 feet. The maximum tonnage of boats which frequent this canal is 300 to 382 tons.

to comply with the customs regulations. If an accident makes a violation of this rule necessary, notice should be given at the nearest customs station as soon as possible. The supervision of the commerce of the canal will be exercised by officers on board of revenue cutters, who are authorized to hail ships, to board them, to inspect their papers, and to search the ships. The main object of this supervision is to see that no unauthorized communication takes place with other vessels or with the land. Captains and crews are required to obey the instructions of the customs officers and to aid them in the performance of their duty. German war vessels and transports and foreign war vessels are not included within these provisions, no customs control being exercised over them.

THE CHARLEROI-BRUSSELS CANAL.

Among present enterprises, we should mention the enlarging of the canal from Charleroi to Brussels and the construction of the Central Canal. Commenced in 1875 and in 1882, respectively, they are progressing with remarkable slowness. The Charleroi-Brussels Canal measures in length 45 miles, of which 15 miles, from Charleroi to Seneffe, have been enlarged to the width of $34\frac{1}{2}$ feet on the bottom and provided with twelve new locks of the length of 127 feet and the width of $16\frac{3}{4}$ feet. The 30 miles separating Seneffe from Brussels are still to be completed. Forty-three locks exist in this portion. These locks, of antiquated pattern, measure only 74 feet in length, $8\frac{3}{4}$ feet in width, and $6\frac{1}{2}$ feet in depth. The boats, called "Charleroi buckets," which can pass, carry only 70 tons.

THE CENTRAL CANAL.

The Central Canal, whose economic interest has considerably lessened, descends from Houdeng, at the end of a branch of the Charleroi-Brussels Canal, to Mons. Its total length is only 13 miles. It is now being constructed with a width at the bottom of $34\frac{1}{2}$ feet and a draft of $6\frac{1}{2}$ feet. It will later be deepened by $1\frac{1}{2}$ feet. The difference in level between Houdeng and Mons is $293\frac{1}{2}$ feet. The first section of the canal already completed from Mons to Obourg overcomes within 8 miles a difference of level of $76\frac{1}{4}$ feet by means of one lock of $7\frac{1}{2}$ feet in fall and five other locks of $13\frac{3}{4}$ feet in fall each. These locks have an available length of 133 feet and a width of $16\frac{3}{4}$ feet. They are provided with all possible appliances. The second section, from Obourg to Houdeng, passes over coal fields, and must, within a distance of less than 5 miles, suffer a difference in level of 217 feet. To effect this purpose, there have been constructed four elevators fitted out with hydraulic pistons, the first three for a fall of $55\frac{1}{2}$ feet and the fourth at Houdeng, which is completed, for a fall of $50\frac{1}{2}$ feet. The Houdeng elevator is one of the most remarkable productions of human industry.

RECENT WORKS.

Some works have been recently executed upon the Scheldt and the Meuse. The dams heretofore existing above Ghent have been replaced by sluice locks 137 feet in length and $18\frac{3}{4}$ feet in width. At the same time the course of the river has been straightened. The work of regularization has likewise been pursued below Ghent, where the river is subject to the influence of the tide. While formerly the section of the river under water, when flowing at its full level, was 721 square feet, and the grade 6.96 inches to the mile, this section now measures 1,216 square feet, and the grade per mile is 9.29 inches.

Nearly \$600,000 had been spent upon the Meuse to straighten the bed in passing and below Namur. Two new locks have also just been built below that city, 328 feet in length, in place of their predecessors which were only 184 feet long.

RAILWAYS V. WATERWAYS.

It is interesting to know how traffic is divided between railroads and navigable ways. In an address relative to the results of the operation of railways, delivered by Mr. Amiot at the Railway Congress at St. Petersburg in 1892, we find that the mile tonnage of merchandise transported by slow freight on the Belgian State railways in 1889 was 1,177,752,607 mile-tons. The amount of the corresponding receipts was \$16,343,519.08; the average cost of transportation of 1 ton over 1 mile being \$0.0139.

While there is no means of verification by official statistics, the total mile-tonnage of all the railways in Belgium may be reasonably estimated at 1,491,294,569.

During the same year the movement of transports upon Belgian navigable ways amounted to 361,017,561 mileage tons. It may, then, be stated that the total of water transportation in Belgium amounts to about 25 per cent of the total railway transportation.

When it is considered that the price of carriage by the State railways amounts to \$0.0139 per ton for the mile, while by boat it is only \$0.0046, it is surprising that the proportion of water freights is not more important.

COMPARISON WITH NEIGHBORING COUNTRIES.

Compared with the condition of economic carriage in Holland, the Belgian situation is not favorable, for in the first-named country, much the larger share of freights is transported by water. The same is true of Rhenish Prussia and Westphalia.

The Belgian situation resembles more the condition of France. Railway transportation in Belgium is slightly cheaper than in France. In the first-named country it is \$0.0139 per ton per mile, while in the latter it amounts to \$0.0149 for the same quantity and distance. On the other hand, water transportation in France is equal to 35 per cent of the total railway carriage, while the proportion in Belgium is only 25 per cent.

The Belgian inferiority in respect to economic water transportation is the more striking since the country is comparatively much more industrial and its system of navigable ways is, proportionally, more extensive. This situation is complicated also by two other reasons—the feeble vitality of Belgian shipping and the high rate of freight. The total traffic on Belgian waterways increased from 323,113,823 mile-tons in 1881 to 387,115,215 mile-tons in 1891, while in France it

increased from 1,247,095,082 mile-tons in 1881 to 2,117,016,914 mile-tons in 1891, or an increase during this period of 20 per cent in Belgium and 70 per cent in France.

The following table gives an idea of the price of freights by water. It indicates the price of coal transportation in Belgium and France from the mine to the seaport:

From—	To—	Distance.	Average rate per ton.	Rate per mile per ton.
<i>Belgian points.</i>				
		<i>Miles.</i>		
Charleroi	Antwerp.....	75.8	\$. 5404	\$0. 0069
	Bruges.....	141.25	.8511	.0062
	Ghent.....	111.25	.6967	.0062
Liege.....	Termonde.....	87	.6350	.0073
	Antwerp.....	96.3	.4536	.0047
	Ghent.....	149.75	.7238	.0048
Mons.....	Antwerp.....	95	.5100	.0054
	Bruges.....	115	.5867	.0059
	Ghent.....	85	.4844	.0057
<i>French points.</i>				
Anzin	Dunkirk.....	116.2	.3185	.0027
	Calais.....	116.8	.3590	.0030
	Rouen.....	273.4	.0943	.0040
Lens.....	Dunkirk.....	77	.2046	.0026
	Calais.....	77.6	.2046	.0026
	Rouen.....	294	1.1387	.0039

CONDITION OF BELGIAN SHIPPING.

We have observed that during the period 1881-1891 Belgian water traffic increased 20 per cent; but let us examine how this occurred. If we consider the three principal rivers connecting with France we find their traffic increased as follows:

River.	1881.	1891.
	<i>Mile-tons.</i>	<i>Mile-tons.</i>
Meuse.....	15,657,089	42,690,705
Sambre.....	19,089,650	38,837,386
Lys.....	8,793,726	19,945,594

A total increase of 57,933,270 mile-tons.

The amount of merchandise which crossed the frontier by these rivers was:

Point.	1881.	1891.
	<i>Tons.</i>	<i>Tons.</i>
Agimont, on the Meuse.....	128,157	575,234
Sobre, on the Sambre.....	440,851	883,590
Comines, on the Lys.....	222,276	396,233

Being a total increase of 1,063,765 tons.

We may, therefore, conclude that the increase in the total of Belgian water traffic was limited to a few water courses, and was due chiefly to a proportional increase of traffic on the French canals.

The Scheldt also shows a considerable increase of traffic with Holland and Germany; so that the increase of traffic, strictly speaking, on the interior waterways of Belgium has been very slight.

On all the canals of the two Flanders, the Upper Scheldt, Brussels-Rupel Canal, and the Maestricht-Bois le Duc Canal, the increase has been insignificant. The progressive movement was more accentuated on the Antwerp-Bocholt, Liege-Maestricht, Blaton-Ath, and Ath-Termonde canals. On the other hand, a decrease occurred on the Mons-Conde, Pommerœul-Antoing, and Brussels-Charleroi canals, as well as on the Rupel.

MOVEMENT OF GOODS IN TRANSIT.

The following table indicates the quantity of merchandise imported, exported, and in transit through Belgium during the past five years:

Description.	1899.	1890.	1891.	1892.	1893.
Imported.....	\$300,308,000.00	\$322,696,000.00	\$347,207,000.00	\$396,448,000.00	\$303,975,000.00
Exported.....	281,394,000.00	277,341,000.00	293,167,000.00	264,217,000.00	261,515,000.00
Merchandise in transit	299,922,000.00	291,623,000.00	256,304,000.00	245,882,000.00	238,162,000.00
Share per inhabitant:					
Imported.....	49.22	52.50	47.09	56.16	49.02
Exported.....	46.12	45.16	47.88	47.29	42.27
Merchandise in transit	49.22	47.48	41.69	41.30	38.99

The figures for goods in transit indicate a continual decrease, amounting in five years to 20 per cent. It certainly proves that foreign merchandise is finding more advantageous routes for reaching its destination.

RAILWAY TARIFFS.

By its geographical situation, Belgium is destined to carry on a considerable railway traffic. A glance at the following table will suffice to show the advantageous natural position of Antwerp as a seaport. The distances of the principal continental ports from the three industrial and commercial centers of Switzerland, Alsace-Lorraine, and Germany, is therein given. From this comparison Antwerp appears to be the nearest port.

Distances in miles.

From—	To—						
	Antwerp.	Havre.	Dunkirk.	Rotterdam.	Amsterdam.	Bremen.	Hamburg.
Basle.....	418	470	450	483	504	500	540
Mulhouse.....	358	449	431	463	483	479	519
Mannheim.....	289	479	402	330	350	346	388

Ten years ago the railway tariffs were also in favor of Antwerp, as we learn from examining the following figures :

Price of transportation per ton (2,205 pounds) according to tariff in force in 1882.

To—	From—									
	Antwerp.		Dunkirk.		Rotterdam.		Bremen.		Hamburg.	
	Rate per ton.	Rate per ton per mile.	Rate per ton.	Rate per ton per mile.	Rate per ton.	Rate per ton per mile.	Rate per ton.	Rate per ton per mile.	Rate per ton.	Rate per ton per mile.
Basle:		<i>Cents.</i>		<i>Cents.</i>		<i>Cents.</i>		<i>Cents.</i>		<i>Cents.</i>
Cereals	\$4.61	1.10	\$5.09	1.13	\$5.35	1.11				
Raw cotton	5.52	1.32	9.13	2.03	5.84	1.21	\$6.80	1.36	\$7.28	1.35
Raw wool	5.86	1.40	12.10	2.69	6.49	1.34				
Pig iron	3.17	.76	5.09	1.13	4.10	.85				
Mulhouse:										
Cereals			5.09	1.18						
Raw cotton	5.26	1.47	9.13	2.12			6.80	1.42	7.28	1.40
Raw wool			12.09	2.60						
Pig iron			5.00	1.16						
Mannheim:										
Cereals	4.00	1.39	6.26	1.55			6.25	1.81	6.98	1.80
Raw cotton	4.00	1.39	9.70	2.40			6.25	1.81	6.98	1.80
Raw wool	4.94	1.71	11.84	2.94			6.25	1.81	6.98	1.80
Pig iron	2.78	.96	4.55	1.18			3.26	.94	3.60	.93

To-day, however, this situation does not exist, as is seen from the following table of freight rates :

Price of transportation per ton (2,205 pounds) according to existing tariffs.

To—	From—									
	Antwerp.		Dunkirk.		Rotterdam.		Bremerhaven.		Hamburg.	
	Rate per ton.	Rate per ton per mile.	Rate per ton.	Rate per ton per mile.	Rate per ton.	Rate per ton per mile.	Rate per ton.	Rate per ton per mile.	Rate per ton.	Rate per ton per mile.
Basle:		<i>Cents.</i>		<i>Cents.</i>		<i>Cents.</i>		<i>Cents.</i>		<i>Cents.</i>
Cereals	\$4.46	1.07	\$4.84	1.08	\$4.78	0.99	\$9.36		\$9.43	1.75
Raw cotton	4.67	1.12	4.87	1.08	5.03	1.04				
Raw wool	5.86	1.40	6.24	1.39						
Mulhouse:										
Cereals							9.24			
Raw cotton										
Raw wool	5.53	1.55	5.42	1.26			9.24			
Pig Iron									7.41	1.43
Frankfort on the Main:										
Cereals	4.22	1.55			4.19	1.40	5.84		5.83	
Raw cotton	3.77	1.41			4.19	1.40				
Raw wool							5.84		5.83	
Pig iron							4.72		4.67	

Antwerp, it will be seen, has lost its advantages by reason of the greater expense of reaching it. For Westphalia and Rhenish Prussia, Rotterdam and Amsterdam are now the most economical routes, while for eastern France, Alsace-Lorraine, and Switzerland, Dunkirk and Havre offer the best rates. Notwithstanding the greater distance to be traversed, the expense of carriage is less than over the shorter route via Antwerp. In the present situation of European railways it is impossible that Antwerp should recover its lost ground, for any reduc-

tion in freights by Belgian railways would be met by a corresponding fall in the rates of its competitors, so that the latter would always have the advantage.

BENEFIT OF CANALS.

Railway tariffs are badly adapted to commercial fluctuations. In this respect water carriage presents an incomparably greater elasticity. Waterways also create a new competition and often cause railways to reduce their tariffs. It is a happy method of forcing the hands of railway monopolies. Here is the heart of the question. The interest of a country is to have its transportation at the cheapest price possible. In this age especially, when the sharpness of international competition seems not to know any limits, carriage at the lowest price possible is an absolute necessity. Now navigable waterways afford an economical method of transportation par excellence. Not only do they prevent the exaggeration of rates by railways, and, indeed, often produce reductions which permit certain industries to compete in foreign markets, but in many cases they also permit the operation and development of natural riches, mines and quarries, which, by their remote situation, can not incur the comparatively high freights of railways in bringing their products to market. As we shall see, this means of transportation is strongly organized on the European continent.

COMPETITION OF FRENCH PORTS AND CANALS.

As already stated, the competition of Havre, Rouen, and Dunkirk with Antwerp is especially directed upon goods produced in eastern France, Alsace-Lorraine, and Switzerland. The next table indicates the average price of freight for cereals between Antwerp, Dunkirk, and Rouen on the one hand, and Strasburg, Colmar, Mulhouse, Metz, and Nancy on the other:

Average rate for freight per ton (2,205 pounds) per mile.

To—	From—								
	Antwerp.			Dunkirk.			Rouen.		
	Dis- tance.	Rate per ton.	Rate per ton per mile.	Dis- tance.	Rate per ton.	Rate per ton per mile.	Dis- tance.	Rate per ton.	Rate per ton per mile.
	<i>Miles.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Miles.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Miles.</i>	<i>Cents.</i>	<i>Cents.</i>
Strasburg.....	482	\$2.90	0.627	465	\$2.70	0.580	486	\$2.70	0.555
Colmar.....	495	3.09	.624	499	2.88	.577	519	2.90	.559
Mulhouse.....	520	3.09	.594	524	3.03	.578	544	3.03	.557
Metz.....	396	2.32	.586	408	2.12	.526	418	2.22	.531
Nancy.....	368	2.12	.576	377	1.93	.512	392	1.93	.492

From this table it will be seen that the rate for Antwerp is in every instance the highest, while the distance is the shortest. The disadvantage is the more important from the fact that in eastern France and

Alsace-Lorraine water carriage is more usual. For instance, in 1893 the water traffic of Nancy amounted to 178,943 tons, chiefly distributed among three navigation companies. Such companies exist in almost every town of that district. Another innovation is the organization of regular steamboat services. There are at present at least 30 steamers navigating the canals of eastern and northern France, and they transport merchandise with the swiftness and regularity of the railroad at a third less expense.

Antwerp still has a slight advantage over Dunkirk in a part of eastern France, especially in the Franch Ardennes. The project of a canal from the Scheldt to the Meuse, to be completed by the canalization of the Chiers from Sedan to Montmedy and Longwy, is, however, a serious menace. By the present route the distances which separate Dunkirk from Mezieres and Nancy are, respectively, 283 and 377 miles; by the new route they would be reduced to 201½ and 348 miles. From Antwerp, the distance to Mezieres is 210 miles; to Nancy, 368 miles.

Another eventuality will some time further affect the trade of Antwerp. Marseilles is loudly demanding communication with the Rhone by a large canal; the construction, indeed, of a new basin to the north of Marseilles is generally regarded as the beginning of this project. This basin cost \$3,475,000; the canal, in length not more than 34 miles, is estimated at \$15,000,000. This large cost is due to the fact that there is a tunnel 4½ miles long; in order to facilitate traffic as much as possible, there are to be two summit-level lakes, separated by locks. If the canalized Saone and the Rhone-Rhine Canal can be transformed in a similar manner, the most beautiful and the richest navigable artery of the world will have been constructed from the North Sea to the Mediterranean. The junction between the Saone and the Marne and Seine could, without doubt, be completed and the Rhine-Marne Canal might be transformed, thus affording conditions incomparably better than those of to-day for communication between Havre, Rouen, the Rhone, and the Rhine. The port of Marseilles would then be able to control the greater part of the immense trade of the Mediterranean, the East Indies, western Africa, Australia, and the Far East with the most active industrial portions of central and western Europe. The completion of such a waterway would be a great economic conquest for France.

Recurring to the subject of existing competition between Antwerp and northern French ports, it may be thought that the advantages offered to seagoing vessels by the former counterbalance the superior interior connections of the latter. Let us see.

First, we must remember that, since 1880, France has spent more than \$155,000,000 for the improvement of its ports. The price of freight is also to be considered. A natural conclusion to draw between two competing ports is, where the freight is the lower the movement of goods will be the larger.

Consult the following table of statistics for 1893:

Port.	Vessels.		Merchandise.
	Number.	Tonnage.	
Antwerp.....	8,838	9,478,062	4,975,519
Dunkirk.....	6,078	3,180,311	2,669,958
Rouen and Havre.....	18,284	8,397,408	5,445,368
Marseilles.....	18,663	10,610,719	5,251,648

COMPETITION OF DUTCH PORTS AND WATERWAYS.

Examine similar statistics for 1890 to 1893 of the ports of Antwerp and Rotterdam:

Year and Port.	Vessels.		Cargo.
	Number arriving.	Tonnage.	
<i>Port of Antwerp.</i>			
1890.....	4,532	4,517,698	3,437,553
1891.....	4,573	4,760,417	3,752,916
1892.....	4,404	4,457,843	3,227,431
1893.....	4,481	4,620,790	3,493,825
<i>Port of Rotterdam.</i>			
1890.....	4,535	2,918,425	4,227,150
1891.....	4,467	3,008,778	4,393,596
1892.....	4,422	3,153,099	4,278,849
1893.....	4,481	3,614,654	4,936,896

The figures show that the amount of merchandise entered at Rotterdam was considerably in excess of the importations at Antwerp.

During the period 1890 to 1893 the increase at Antwerp was only 56,272 tons, or 1.41 per cent, while at Rotterdam it was 709,746 tons, or 14.4 per cent. To-day's figures are not reassuring, especially when compared with those of fifteen years ago. Antwerp then held first place; some of its present competitors could scarcely be considered.

The following figures, showing the tonnage entering the various ports in 1880, clearly indicate this fact:

Antwerp.....	Tons.	3,063,825	Rotterdam.....	Tons.	1,681,650
Marseilles.....	2,769,047	Bremen.....	1,169,466		
Hamburg.....	2,766,806	Dunkirk.....	825,948		
Havre.....	2,267,806				

CAUSES OF THE DEVELOPMENT OF ROTTERDAM.

Rotterdam is to-day certainly the most formidable competitor of Antwerp. How is it that the amount of merchandise passing through Rotterdam has tripled in fifteen years? Neither the superiority of the port and its appliances nor its moderate charges suffice to account for this growth. The difference in rates is only a few fractions of a cent, which, though something, is very little compared with the difference in interior freight rates. To understand the situation we should know

that the development of traffic at Rotterdam is directly connected with the industrial growth of Westphalia and Rhenish Prussia and the expansion of their commercial relations with countries beyond the seas. Among the imports we find more than 1,000,000 tons of minerals and among the exports more than 2,000,000 tons of coal. Still, Holland neither consumes minerals nor produces coal. But the Dutch have admirably understood how to attract German transit trade. They have constructed at Rotterdam the most powerful apparatus existing in any continental port for the mechanical handling and loading of coal. The cars loaded with coal are successively drawn upon the platform of an Armstrong hydraulic elevator, which lifts them 30 feet above the ground. At this height, the wagon is inclined so that the coal immediately slides upon an inclined plane into the hold of the vessel. In this manner, within one hour, 20 car loads, or 200 tons, of coal can be discharged. The charge is 4 cents per ton, including everything, from the time the car leaves the railway track until it is returned. During 1893, 113,900 tons of coal and coke were handled. A new elevator to lift cars of 25 tons to the height of 40 feet is being constructed.

INFLUENCE OF RHINE NAVIGATION.

But it is the Rhine which has become the principal factor in the prosperity of Rotterdam. To see how closely its maritime traffic is connected with the navigation of this river, let us examine the movement to and from Rhine ports. In a previous table we have already noticed that 4,422 ships of 3,153,099 tons entered the port of Rotterdam in 1892 and 4,481 vessels of 3,614,654 tons in 1893. The amount of merchandise imported was 4,278,849 tons and 4,936,896 tons, respectively, an increase of 658,047 tons. During these two years the traffic between Rhine ports and Rotterdam increased from 2,661,495 tons to 3,290,048 tons of merchandise, an increase of 628,553 tons.

Similar statistics for the port of Antwerp do not exist, but statements of the German custom-house at Emmerich indicate for 1892 a passage of 1,447,016 tons of merchandise between Germany and Belgium, and for 1893, 1,310,033 tons. They likewise show that in 1892, 4,863,853 tons of merchandise passed through Emmerich between Germany and Holland. The amount for 1893 was 5,423,418 tons. There was, therefore, an increase in the traffic between Germany and Holland of 557,565 tons of merchandise, while between Germany and Belgium there was a decrease of 136,983 tons.

How can we explain the unfavorable situation of Belgium? First, by the extremely low rates of freight existing between Rotterdam and the Rhine ports. Frequently the carriage of a ton of mineral does not cost more than \$0.00155 per mile. The expense from Antwerp to Ruhrort is at least twice as much per mile. The following table shows the average cost of the transportation of cereals between Antwerp,

Rotterdam, and Amsterdam on the one hand, and the principal markets of the Rhine on the other:

From—	To—								
	Ruhrort-Duisburg.			Cologne-Deutz.			Mannheim.		
	Dis- tance.	Rate per ton.	Rate per ton per mile.	Dis- tance.	Rate per ton.	Rate per ton per mile.	Dis- tance.	Rate per ton.	Rate per ton per mile.
	<i>Miles.</i>		<i>Cents.</i>	<i>Miles.</i>		<i>Cents.</i>	<i>Miles.</i>		<i>Cents.</i>
Antwerp	203	\$0.76	0.374	259	\$0.89	0.344	421	\$1.21	0.287
Rotterdam	134	.91	.231	191	.41	.214	352	.77	.218
Amsterdam	167	.48	.287	223	.63	.282	365	1.16	.301

Besides the extremely low rates of freight, the Dutch ports have a very important advantage in the superiority and regularity of their steam service. While at Antwerp there is only a single line—foreign, indeed—running to Frankfort and Mannheim, consisting of boats drawn by tugs, there are at Rotterdam and Amsterdam several rapid services with large vessels carrying 600 to 800 tons of goods. These boats require only three to four days to cover the 353 miles between Mannheim and Rotterdam, a time which is scarcely lessened by the railways. Not only do these conditions compete with the Belgian waterways, but even the railroads are beginning to feel the effects. It is not natural to suppose that the merchants and manufacturers of the Rhine region will continue to pay a rate of \$3 to \$5 per ton by rail to Antwerp when they can ship by regular service to Rotterdam at \$1.40 to \$1.60 or less per ton. Nor is this competition limited to the few cities and ports situated immediately on the Rhine. Far different. The influence of the ports of Ruhrort and Duisburg extends over Westphalia; that of Dusseldorf and Cologne over Rhenish Prussia; that of Frankfort and Mannheim over Bavaria, Wurtemberg, Baden, Alsace-Lorraine, and Switzerland.

The improvements to be made upon the Rhine-Dortmund Canal, the Moselle, and the upper Rhine to Strasburg will certainly increase the influence of Rotterdam in Westphalia, Alsace-Lorraine, and Switzerland. Let us look a moment at the price of freights. The rate for cereals from Rotterdam to Metz will not exceed \$1.15 per ton, and to Nancy \$1.35. At present, by the Belgian canals, the rate from Antwerp to Nancy is \$2.12. For Strasburg the situation will be the same. And what of the railways? How can they compete with such rates when they ask from Antwerp to Strasburg \$4.26 per ton for cereals! For other goods the difference is proportional. Freight by rail between Antwerp and Strasburg is \$5.99 per ton, while by Rotterdam and the Rhine it is only \$1.93.

In this connection, as a conclusion to our description of Rhine traffic, it may be interesting to note the amount of commerce at some of its

ports. At Frankfort on the Main, for instance, the tonnage increased from 155,956 tons in 1886 to 597,315 tons in 1890. The traffic at other ports of the Rhine in 1891 was:

	Tons.		Tons.
Ruhrort	3, 535, 607	Ludwigshafen.....	819, 970
Mannheim	2, 802, 703	Cologne and Deutz	570, 983
Duisburg	2, 744, 622	Mayence	252, 508

CONCLUSION.

From this review of the existing conditions of inland navigation in France, Germany, Holland, and Belgium, we have learned how thoroughly the system of interior waterways is organized, especially in Holland and the Rhine district. Belgium, although naturally in a superb situation for controlling the transit traffic between the countries southeast of her and those beyond the seas, finds her position seriously menaced. Rotterdam and Amsterdam on the one hand, Dunkirk, Calais, and Havre on the other, are making strenuous efforts to displace the commerce of Antwerp. Failure to maintain Belgian waterways up to the modern standard is largely responsible for this condition. It is not the intention here to go into the details of proposed remedies; suffice it to say that the subject of improved interior waterways is now being agitated. Measures will doubtless soon be taken to promote the best interests of Belgium. But, aside from the question of improvement, there is one element lacking to the prosperity of inland navigation; that is, want of freedom in the movements of commerce. The canal tollgate still exists in Belgium. It is a relic of history. France abolished it many years ago. It exists only in this country, and here its results are disastrously evident. When the tollgate and its keeper disappear, then Belgium can hope to compete with her neighbors as carrier of the commodities of other nations.

In this résumé, made as brief as possible but unfortunately still too long, the effort has chiefly been to present a clear idea of the methods employed by the chief industrial nations of the Continent to secure economical, safe, regular, and speedy transportation of their products to market, and to bring to themselves in like manner their necessary supplies from other parts of the world. Millions and millions of dollars have been spent and are still being spent by Germany, France, and Holland for this purpose. No sacrifice seems too great for them, and indeed the seaports, as we have seen, are not the only recipients of this bounty. They understand that the heart can not be in good order without healthy veins and arteries. Hamburg, Bremen, Amsterdam, Rotterdam, Antwerp, Dunkirk, Calais, and Havre are centers whence the great arteries of trade and commerce radiate; but every one of these ports depends, in turn, upon the thorough and complete organization of its tributary system of railways, rivers, and canals. Just as these adjuncts are in more or less activity, so is the influence of the

port greater or less; just as they are more or less far-reaching, so is its trade large or small. The same conditions are apparent in our own country, but results are generally facilitated by the good humor of nature, which has almost always, by the evident advantages of situation, pointed out to us our commercial centers. We have seldom developed a great port or a great river and canal system against the apparent disposition of nature, or at least without its generous aid. In this respect, we may, perhaps, still have something to learn; at least a study of European examples will enable us to more confidently oppose the difficulties which may beset us in any such undertaking.

HENRY C. MORRIS,

Consul.

GHENT, *July 25, 1895.*

APPENDIX F.

BRAZIL.¹

I have been earnestly striving for many months to obtain reliable comprehensive data from which to make satisfactory report on the highways of commerce of Brazil, and I regret to say now that many important facts are unobtainable.

This country is very backward in the matter of publishing promptly statistical information as to commercial affairs. I have, however, appended the tables compiled by Crockatt de Sa, C. E., inspector-general of railways in Brazil. These tables cover the latest statistical information obtainable on the railway systems of this country.

The lengths of lines and gauges are stated in kilometers and meters, respectively, and decimals of the same.

Estimate milreis at 22 cents each, this table being in paper currency.

All railway lines are single track. Physical conditions are generally poor as compared with the roads of the United States. Classification of freight and rates are regulated by the executive branches of the Government, and frequent changes in them are made. All roads owned by the Federal Government are operated by the Government, and generally at a loss. The number of men employed to operate a train is threefold more than in the United States; and while the cost per mile for passenger fare is probably 40 per cent less than the average in the United States, the accommodations are very uncomfortable and the cars generally crowded on the main thoroughfares. There is an urgent necessity for the adoption of sleeping cars. Freight rates are extremely high and the service very tardy and unreliable. For certain branch lines freight is only received by the main lines in this city on certain days of each month, notice of which is given, and as a result the drays carrying freight to the depots here on those days block the neighborhood all the day, and often only succeed in delivering one load of freight each during a day. Instances are not rare when it has required from four to six months to have a shipment of goods delivered by the railroad a distance of 300 miles. Each business firm in this city is forced to keep a freight dispatcher specially employed at the freight depot here to see that goods are promptly and properly forwarded. In many instances this adds an item of expense to a business firm of from \$40 to \$50 (gold) per month. There is certainly great need of a thorough reform in the operation of Brazilian railways.

¹ Received too late for insertion at its proper place.

The lines of railway running from this city to Petropolis (25 miles) and beyond and to the top of the Corcovado Mountain, situated in the outskirts of this city, are operated up and down the mountains by steam engines fitted with cogwheels underneath their centers. The cogs of the wheel catch in the cogs of the rail in center of track. The speed is about 6 miles per hour up and 8 miles down. The elevation is about 2,500 feet in the distance of 6 miles. The service has proved quite satisfactory during past six years. The engines are of Swiss manufacture, and they are operated by native engineers.

I also append a schedule of passenger steamship lines operating between this and foreign ports. There are three regular lines of Brazilian steamers plying between domestic ports.

WM. T. TOWNES,
Consul-General.

RIO DE JANEIRO, *August 22, 1895.*

Railway system of the States (Brazil).

Title.	Termini.	States traversed.	Gauge.	Length of lines.		
				In traffic.	In construction from approved plans.	Total.
Santo Amaro.....	Santa Anna and Bom Jardim.	Bahia.....	<i>Meter.</i> 1	<i>Kiloms.</i> 38.200	<i>Kiloms.</i>	<i>Kiloms.</i> 38.200
South of Espirito Santo.	Victoris and Cachoeiro do Itapemirim.	Espirito Santo..	1	.....	161.000	161.000
				36.200	161.000	197.200



Title.	Termini.	Gauge.
		<i>Meters.</i>
Baturité.....	Fortaleza and Crato.....	1.00
Mamanguape Branch.....	Maracanabá and Mamanguape.....	1.00
Custom-house.....	City terminus and custom-house.....	1.00
Sobral.....	Camocim and Sobral.....	1.00
Sobral (extension).....	Sobral and Cracheás.....	1.00
Central of Pernambuco.....	Recife and Pesqueira.....	1.00
South of Pernambuco.....	Una and Guaranhuns.....	1.00
Branch of Glycerio to União.....	Glycerio and União.....	1.00
Branch of Timbaúba to Pilar.....	Timbaúba and Pilar.....	1.00
Branch of Quarabira to Nova Cruz.....	Guarabira and Nova Cruz.....	1.00
Branch of Mulungá to Campina Grande.....	Mulungá and Campina Grande.....	1.00
Branch of Angelin to Agua Bella.....	Angelin and Agua Bella.....	1.00
Alagoinhas to Villa Nova da Rainha.....	Alagoinhas and Villa Nova da Rainha.....	1.00
Alagoinhas (extension).....	Villa Nova da Rainha and Joazeiro, on the River Sao Francisco.....	1.00
Branch to Jacú.....	Alagoinhas and Jacú (branch of Santo Amaro).....	1.00
Branch to Feira de Santa Anna.....	42 kilometers from main line to Feira de Santa Anna.....	1.00
Paulo Afonso.....	Piranhas harbor, on River Sao Francisco and Jatobá.....	1.00
Rio do Ouro.....	Ponta do Cajú and Represas do Rio do Ouro.....	1.00
Branch to Iguassú.....	Cava and Tingá.....	1.00
Branch to Rio do Ouro and Santo Antonio.....	Rio do Ouro and Santo Antonio.....	1.00
Branch to Rio Sao Pedro.....		1.00
Branch to Penha.....	Murmura and Fazenda Grande.....	.80
Central of Brazil.....	Capital Federal and Lafayette.....	1.60
Branch to Gambóa.....	1 kilometer in the main line and station on the quay of Gamboa.....	1.60
Branch to Campinho.....	Cascadura (15 kilometers in main line) and Campinho.....	1.60
Branch to Santa Cruz.....	Sapopemba (21.975 kilometers) and Santa Cruz.....	1.60
Branch to Macacos.....	Belem (62 kilometers in main line) and Macacos.....	1.60
Branch to Porto Novo du Cunha.....	Entre Rios and Porto Novo do Cunha.....	1.60
Extension.....	Lafayette and Pirapora.....	1.00
Branch to Sao Paulo.....	Barra do Pirahy (108 kilometers in the main line) and Cachoeira.....	1.60
Branch to Sao Paulo (narrow-gauge section).....	Cachoeira and Sao Paulo.....	1.00
Branch to Ouro Preto.....	Lafayette and Ouro Preto.....	1.00
Porto Alegre to Uruguayana.....	River Taquary and Uruguayana.....	1.00
Branch to Cacequi to Bagé.....	Cacequi and Bagé.....	1.00
Branch to Santa Anna do Livramento.....	Main line near Bagé and Santa Anna do Livramento, Saycan and Santa Anna.....	1.00

the Union (Brazil).

Length of lines.					Results of traffic during the financial year 1892.			
In traffic.	In construction from approved plans.	Surveyed.	Proposed.	Total.	Receipts.	Expenses.	Net profits.	Deficit.
<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Milreis.</i>	<i>Milreis.</i>	<i>Milreis.</i>	<i>Milreis.</i>
187,589	202,011	271,189	.....	600,789	548,653	655,575	.....	106,923
7,141	.....	.....	.....	7,141				
2,900	.....	.....	.....	2,900	82,460	148,614	.....	66,154
128,920	.....	.....	.....	128,920				
.....	87,640	.....	110,000	197,640	400,157	532,817	.....	132,660
89,000	81,011	.....	.....	170,011				
146,420	.....	.....	.....	146,420	872,168	594,017	.....	221,849
.....	47,315	.....	.....	47,315				
.....	10,000	33,000	.....	43,000	283,808	774,235	.....	490,427
.....	.....	53,157	.....	53,157				
.....	.....	59,736	.....	59,736	93,886	138,094	.....	44,208
.....	.....	36,500	153,500	190,000				
821,993	.....	.....	.....	321,993	239,304	346,963	.....	107,659
.....	131,060	.....	.....	131,060				
.....	41,000	.....	.....	41,000	19,869,190	17,123,525	2,745,665	.....
.....	.....	64,000	.....	64,000				
116,000	.....	.....	.....	116,000	1,864,617	1,327,828	36,789	.....
58,211	.....	.....	.....	58,211				
12,141	.....	.....	.....	12,141	23,254,242	21,641,672	2,782,454	1,160,890
614	.....	.....	.....	614				
11,441	.....	.....	.....	11,441	1,327,828	36,789	.....	.....
6,436	.....	.....	.....	6,436				
462,290	.....	.....	.....	462,290	1,864,617	1,327,828	36,789	.....
1,123	.....	.....	.....	1,123				
1,524	.....	.....	.....	1,524	1,864,617	1,327,828	36,789	.....
34,090	.....	.....	.....	34,090				
4,929	.....	.....	.....	4,929	19,869,190	17,123,525	2,745,665	.....
63,764	.....	.....	.....	63,764				
147,822	100,000	210,000	.....	547,822	1,864,617	1,327,828	36,789	.....
157,198	.....	.....	.....	157,198				
231,000	.....	.....	.....	231,000	1,864,617	1,327,828	36,789	.....
42,451	.....	.....	.....	42,451				
377,000	254,784	.....	.....	631,784	1,864,617	1,327,828	36,789	.....
.....	205,863	.....	.....	205,863				
.....	.....	.....	380,000	330,000	1,864,617	1,327,828	36,789	.....
.....				
2,606,997	1,250,684	727,582	593,500	5,178,763	23,254,242	21,641,672	2,782,454	1,160,890

Private railway

Title.	Termini.	Gauge.	Length of lines.		
			In traffic.	In construction.	
		Meters.	Kiloms.	Kiloms.	
Taguary to Estrella.....	Taguary and Estrella.....	1.0			
Capital Federal to Guaratiba.....	Capital Federal and Guaratiba.....	1.0			
Sao Matheus to Peçanha.....	Mouth of Sao Matheus and Peçanha.....	1.0			
Recife to Pacifico.....	Recife and Valparaíso.....				
Jaguarao.....	Jaguarao and Serro Chato.....	1.0			
Metropolitana.....		1.0			
Rio Doce.....	João Gomes (Palmyra) and Piranga.....	1.0			3. 135
Rio Doce (extension).....	Piranga and E. F. Victoria to Peçanha.....	1.0			174. 320
Uberaba to Coxim.....	Uberaba and Coxim.....	1.0			
Diamantina.....	Porto da Manga and Diamantina.....	1.0			
Branch of Serro.....	Bandeirinha and Serro.....	1.0			
Extension to Santa Anna dos Ferros.....	Serro and Santa Anna dos Ferros.....	1.0			
Extension from Ferros to Itabira.....	Santa Anna dos Ferros and Itabira.....	1.0			
Carinhauha.....	Mouth of Rio Verde and division of Goyaz.....	1.0			
Jequitinhonha (main line).....	Montes Claros and Salto Grande.....	1.0			
Jequitinhonha (branch of Guaratuba).....	Heights of Gorut and mouth of Rio Verde in the Sao Francisco.....	1.0			
Bomfim.....	Arraial Bomf. and Ponte do Pinho E. F. R. D.....	1.0			
Turvo.....	Cidade do Turvo and E. F. Oeste.....				
Campinas to Funil.....	Campinas and Funil.....	.60			41. 000
Caravellas to Aymorés.....	Caravellas and Aymorés.....	1.0	142. 400		
Aymorés to Theop. Ottoni.....	Aymorés and Theop. Ottoni.....	1.0	91. 000		142. 800
Theoph. Ottoni to Peçanha.....	Theoph. Ottoni and Peçanha.....	1.0			
Victoria to Peçanha.....	Victoria and Peçanha.....	1.0			84. 100
Araçajú to Simão Dias.....	Araçajú and Simão Dias.....	1.0			
Branch of Capella.....	6 kilometers and Capella.....	1.0			88. 157
Santos to Sao Vicente.....	Santos and Sao Vicente.....	1.0	9. 000		
Santo Amaro.....	Sao Paulo and Santo Amaro.....	1.05	19. 000		
Villa Marianna to Villa Mayrink.....	Villa Marianna and Villa Mayrink.....	1.05	2. 000		2. 000
Branch of Gazometro.....	Villa Marianna and aterrado do Gazometro.....	1.05	6. 000		
Bananalense.....	Barra Mansa and Bananal.....	1.0	29. 000		
Of Bananal.....	Saudade and Bananal.....	1.0	11. 000		
Bragantina.....	Campo Limpo and Bragança.....	1.0	52. 000		
Cataguazes.....	Cataguazes and Santo Antonio do Muriahé.....	.60			48. 180
Alagoás to Paulo Affonso.....	Cidade Alagoás and E. F. Paulo Affonso.....	1.0			121. 615
Branch of Palmeira dos Indios.....	Sapucaia and Palmeira dos Indios.....	1.0			74. 492
Branch of Baixo Sao Francisco.....		1.0			
Tijuca.....		1.0			11. 000
Bragança.....	Belem and Bragança.....	1.0	59. 000		
Peçanha to Araxá.....	Peçanha and Araxá.....	1.0			
Itapemirim.....	Cachoeiro do Itapemirim and Alegre.....	1.0	70. 000		
Do Quilombo.....	Porto das Flores and Madre de Deus.....	1.0			
Cruzeiro to Santa Cruz.....	Cruzeiro and Santa Cruz.....	1.0			
Sao Jeronymo (main line).....	Xarquesadas and Sao Jeronymo.....	1.0	15. 440		
Sao Jeronymo (extension).....	Sao Jeronymo and Passo do Mendonça.....	1.0			189. 000
Sao Jeronymo (branch).....	Serraria E. F. Bagé e Uruguay.....	1.0			
Tamandaré to Barra.....	Tamandaré and Settlement Socorro.....	1.0			7. 000
Do.....	Barra Velha and Palmares.....	1.0			
Do.....	Palmares and Sao Bento.....	1.0			
Marianna.....	Marianna and Barra do Caeté.....	1.0			
Cantagallo.....	Nitheroy and Cachoeira.....	1.0	73. 440		
Do.....	Cachoeira and Macuco.....	1.1	104. 986		
Branch of Sumidouro.....	Mello Barreto and Sumidouro.....	1.0	34. 484		
Branch of Sumidouro (extension).....	Sumidouro and Conselheiro Paulino.....	1.0	58. 228		
Branch of Rio Bonito (or Macahé).....	Porto das Caixas and Macahé.....	1.0	146. 490		
Branch of Sao Fidelis.....	Campos and Lucca.....	1.0	53. 324		
Carangola.....	Campos and Santo Antonio de Carangola.....	1.0	198. 432		
Branch of Patrocínio.....	Junction with Carangola and Poço Fundo.....	1.0	33. 261		
Branch of Itabapoana.....	Station of Murundú and Santo Eduardo.....	1.0	22. 263		
Santo Eduardo.....	Santo Eduardo and Cachoeiro.....	1.0	1. 650		89. 341
Grão Pará.....	Mauá and Sao José do Rio Preto.....	1.0	92. 088		
Norte.....	Sao Francisco Xavier and junction.....	1.0	45. 340		
Main line (Leopoldina).....	Porto Novo and Recreio.....	1.0	66. 835		
Do.....	Recreio and Saudé.....	1.0	302. 082		
Branch of Pirapetings.....	Volta Grande and Pirapetings.....	1.0	31. 032		
Branch of Muriahé.....	Recreio and Santa Luzia.....	1.0	149. 347		64. 734
Subbranch of Sao Paulo.....	Junctiou (R. Muriahé) and Sao Paulo.....	1.0	17. 733		

companies of Brazil.

Length of lines.		Under Government supervision.				Under the supervision of the States.			
Surveyed.	Proposed.	Extent with guarantee.	Extent without guarantee.	Guaranteed capital.	Rate.	Extent with guarantee.	Extent without guarantee.	Guaranteed capital.	Rate.
<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Milreis.</i>	<i>P. ct.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Milreis.</i>	<i>P. ct.</i>
	70.000					70.000		1,600,000	7
9.800	55.000		64.800				200.000		
	200.000						100.000		
	100.000		3.135			174.320		5,229,600	6
	340.000						340.000		
95.510	904.490	1,000.000		30,000,000	6			3,000,000	7
108.760						108.760			
87.076						87.076			
191.900						191.900		3,638,000	6
81.000							81.000		
	480.000						480.000		
	620.000						620.000		
	400.000						400.000		
	38.000					38.000		950,000	6
	80.000					80.000		2,000,000	6
							41.000		
							142.400		
						233.800		7,000,000	7
242.600						242.600		4,420,000	6
422.518		506.618		15,198,540	6	212.618		4,252,360	6
108.060		108.060		5,826,510	6				
		86.157							
							9.000		
							19.000		
							4.000		
							6.000		
							29.000		
							11.000		
						52.000		2,320,000	7
						48.180		500,000	6
		121.615		17,913,210	6				
		74.492							
268.000	133.000	401.000							
4.000			15.000						
150.000						209.000		5,852,000	7
850.000		850.000		25,500,000	6				
	204.000					70.000		1,200,000	7
	183.000					204.000		2,500,000	6
37.000			220.000						
							15.440		
		189.000		5,670,000	6				
375.000			375.000						
90.500		97.500		3,912,000	6				
32.900		32.900							
	150.000		150.000						
	430.000					430.000		10,000,000	6
			73.440						
			104.986						
			58.288				34.484		
			146.499						
		166.432		6,000,000	7		53.324		
		33.261							
		22.263							
		91.000		2,730,000	6				
			92.038						
			120.340						
	75.000		66.835				66.835		
106.073			302.082			271.187		7,000,000	7
236.469							31.032		
						336.242		8,400,000	7
							17.733		

Private railway companies

Title.	Termini.	Gauge.	Length of lines.	
			In traffic.	In construction.
		Meters.	Kiloms.	Kiloms.
Subbranch of Paraokena	Itapiruseú and Paraokena.....	1.0	18.000	
Subbranch of Leopoldina.....	Vista Alegre and Leopoldina.....	1.0	12.284	
Subbranch of Serraria.....	Serraria and Guarany.....	1.0	109.560	
Subbranch of Juiz de Fóra.....	Juiz de Fóra and Píáu.....	1.0	58.101	
Subbranch of Rio Novo.....	Rio Novo and Furtado de Campos.....	1.0	8.460	
Junction Line.....	Guarany and junction.....	1.0	40.858	
Branch of Pomba.....	Guarany and Pomba.....	1.0	27.196	
Barão de Ararunama.....	Quissamã and Triumpho.....	1.0	40.300	
Barão de Ararunama (extension).....	Triumpho and Visconde de Imbé.....	1.0	45.434	48.066
Imbetiba to Campos.....	Imbetiba and Campos.....	1.0	96.520	
Campos to Sao Sebastião.....	Campos and Sao Sebastião.....	1.0	22.972	
Santo Antonio de Padua.....	Lucca and Miraesma.....	1.0	91.002	
Branch of Cantagallo.....	Cordeiros and Portella.....	1.1	77.413	
Madeira to Guaporé.....	Humaytá to Guaporé and Mamoré.....	1.0		
Maricá.....	Nctheroy and Maricá.....	76	40.000	18.000
Muzambinho (trunk).....	Pedra Branca and River Station of Rio Verde.....	1.0		
Branch of Sao Sebastião do Paraíso.....	Station of Onça and Sao Sebastião.....	1.0		
Branch of Sao Sebastião do Paraíso (extension).....	Sao Sebastião do Paraíso and Jaguára.....	1.0		
Subbranch of Araxá.....	Forquilha and Araxá.....	1.0		
Branch of Lavras.....	Varginha and Lavras.....	1.0		
Branch of Campanha to Poços.....	Campanha and Poços de Caldas.....	1.0		
Branch of Passos.....	155 kilometers (of trunk) and Passos.....	1.0		
Tree Corações to River Station of Rio Verde.....	Tree Corações and River Station.....	1.0	57.240	
Branch of Campanha.....	106 kilometers (E. Minas e Rio) and cidade Campanha.....	1.0		86.000
Taubaté to Ubatuba.....	Taubaté and Ubatuba.....	1.0		171.219
Sítio to Sao João d'El Rey.....	Sítio and Sao João d'El Rey.....	76	99.196	
Sao João d'El Rey to Oliveira.....	Sao João d'El Rey and Oliveira.....	76	172.100	
Oliveira to the mouth of the Paraopeba.....	Cidade de Oliveira and mouth of Paraopeba.....	76	258.240	71.000
Branch of Lavras.....	Aureliano Mourão and Lavras.....	76	48.660	
Branch of Itapecerica.....	Gonçalves Ferreira and Itapecerica.....	76	35.000	
Branch of Pitanguy.....		76		
Barra Mansa to Catalão.....	Barra Mansa and Catalão.....	1.0		656.174
Paraopeba.....	Carandahy and mouth of Paraopeba.....	1.0		
Branch of Congonhas.....		1.0		
Rio das Flores.....	Commercio and Santa Rosa.....	1.0	62.690	19.000
Sul Paulista.....	Itá and Iguape.....	1.0		
Magé to Theresopolis.....	Piedade and Theresopolis.....	1.0		
União Valenciana.....	Decegano and Rio Preto.....	1.10	63.900	
Sao Francisco to Blumenau.....	Sac Francisco and Blumenau.....	1.0		
Blumenau to Estreito.....	Blumenau and Estreito.....	1.0		
Blumenau to Lages.....	Blumenau and Lages.....	1.0		
Lages to Lagóa Vermelha.....	Lages and Lagóa Vermelha.....	1.0		
Lagóa Vermelha to Porto Alegre.....	Lagóa Vermelha and Porto Alegre.....	1.0		
Lages to Chopim.....	Lages and mouth of Chopim.....	1.0		
Lagóa Vermelha to Passo Fundo.....	Lagóa Vermelha and Passo Fundo.....	1.0		
Corcovado.....	Larangeiras and Peak of Corcovado.....	1.0	8.775	
Caxias to Sao José das Cajazeiras.....	Caxias and Sao José das Cajazeiras.....	1.0		77.300
Caxias to Aragnaya.....	Caxias and River Aragnaya.....	1.0		
Pequiry.....	Lafayette and settlement Pequiry (mun. Queluz).....			
Central de Macahé.....	Macahé and Glycerio.....	1.0	44.000	13.280
Louveira to Itatiba.....	Louveira and Itatiba.....	1.0	20.000	
E. F. Mar de Hespanha or to Aventureiro.....	Stat. Sao Pedro and branch of Sao Antonio Aventureiro.....	1.0		
Elevated railway.....		1.0		
Mogyana (trunk).....	Campinas and Ribeirão Preto.....	1.0	318.000	
Ribeirão Preto to Jaguára.....	Ribeirão Preto and Ponte de Jaguára.....	1.0	193.514	
Jaguára to Catalão.....	Ponte de Jaguára and Catalão.....	1.0	101.733	200.200
Branch of Amparo.....	Jaguary and Socorro.....	1.0	48.000	
Branch of Silveiras.....	Amparo and Serra Negra.....	60	41.000	
Branch of Feinha.....	Mogy-mirim and Eleuterio.....	1.0	47.000	
Branch of Espirito Santo do Pinhal.....	Mogy-guassú and Espirito Santo do Pinhal.....	1.0	37.000	
Branch of Caldas.....	Cascavel and Caldas.....	1.0	77.080	
Branch of Rio Pardo or Mococa.....	Casa Branca and Canóas.....	1.0	72.000	
Branch of Jatahy.....		1.0		
Branch of Areia Branca.....		1.0		12.000
Resaca to Santos.....	Resaca and Santos.....	1.0		5.000
Ouro Preto to Peçanha.....	Ouro Preto and Peçanha.....	1.0		
Bambuihy to Patos.....	Bambuihy and Patos.....	1.0		

HIGHWAYS OF COMMERCE.

737

of Brazil—Continued.

Length of lines.		Under Government supervision.				Under the supervision of the States.			
Surveyed.	Proposed.	Extent with guaran-tee.	Extent without guaran-tee.	Guaranteed capital.	Rate.	Extent with guaran-tee.	Extent without guaran-tee.	Guaranteed capital.	Rate.
<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Milreis.</i>	<i>P. ct.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Milreis.</i>	<i>P. ct.</i>
			12.284						
						109.580	18.000		
						58.101	12.284	2,990,912	7
							8.460	1,800,000	7
						40.858		2,200,000	7
			40.300			27.196			
		93.500		2,805,000	6				
			96.520						
			22.972						
							91.002		
	800.000		800.000				77.413		
146.800						56.000		450,000	
						146.800		3,435,258	6
88.000						88.000		2,128,242	6
	110.000					110.000		2,750,000	6
	60.000						60.000		
	96.000					96.000		2,350,000	6
	160.000						160.000		
94.760	100.000					194.760		4,869,000	6
			57.240						
		86.000		2,509,500	4				
		171.219		5,136,570	6				
							99.196		
						172.100		4,000,000	7
						329.240		5,500,000	7
						48.660			
						35.000			
16.826	9.000						9.000		
	367.000	1,040.000		31,200,000	6				
12.600	470.000					470.000		7,500,000	7
						12.600			
366.936		366.936		11,008,080	6		80.000		
46.000						46.000			
							63.900		
125.961		125.961		3,778,830	6				
139.000		139.000		4,170,000	6				
239.000		239.000		7,170,000	6				
182.000		182.000		5,460,000	6				
335.580		335.580		10,067,400	6				
	400.000	400.000		12,000,000	6				
145.800		145.800		4,374,000	6				
			3.775						
		77.300		2,319,000	6				
182.720	567.280	750.000		22,500,000	6				
	15.000					15.000		375,000	6
		57.280		1,718,400	6				
69.700						69.700	20.000	2,000,000	7
10.000							318.000		
		193.514	10.000	6,153,857	6				
77.760		379.693		11,390,790	6				
18.000									
							66.000		
							41.000		
							47.000		
							37.000		
		77.080							
							72.000		
							12.000		
220.000			225.000			230.000		8,000,000	
170.000	247.650		417.650						
	230.000								

Private railway companies

Title.	Termini.	Gauge.	Length of line.	
			In traffic.	In construction.
		Meters.	Kiloms.	Kiloms.
Pauлиста (trunk)	Jundiáhy and Descalvado	1.60	226.000	
Limeira to Piracicaba	Limeira and Piracicaba	1.60		
Branch of Rio Claro	Cordeiro and Rio Claro	1.60	17.000	
Branch of Santa Veridiana	Laranja Azeda and Lage (Santa Veridiana)	1.60	38.000	
Rio Claro	Rio Claro and Araraquara	1.0	127.088	
Branch of Jahú	Station of Visconde Rio Claro and Jahú	1.0	133.000	
Siding to Brotas		1.0	10.000	
Branch of Agua Vermelha	Sao Carlos do Pinhal and Santa Eudoxia	1.0	56.000	7.000
Rio Claro (extension)	Araraquara and Berretos	1.0	96.000	
Sao Carlos do Pinhal and Ribeirão Bonito	Sao Carlos and Rio Bonito	1.0		40.000
Branch of Santa Rita de Passa Quatro	Porto Ferreira and Santa Rita	.60	27.000	
Descalvadense	Descalvado and Aurora	.60	14.000	
Jundiáhy to Sao Sebastião	Jundiáhy and Sao Sebastião	1.60		
Maceió to Leopoldina	Maceió and Leopoldina	1.0		
Branch of Porto Calvo	61 kilometers and Porto Calvo	1.0		
Branch Ferreo Campineiro	Campinas and Cabras	.60	21.000	11.000
Branch of Santa Maria	Cavalcante and Santa Maria	.60		11.000
Branch Ferreo Dumont	Ribeirão Preto and fazenda Arindituba	.60	23.000	
Tram. road Nazareth	Nazareth and Santo Antonio de Jesus	1.0	33.814	
Do	Santo Antonio de Jesus and Amargoso	1.0	65.000	
Recife to Olinda	Recife and Olinda	1.32	12.000	
Cruz Alta to Uruguaý	Cruz Alta and Rio Uruguaý	1.0		381.520
Uruguaý to Iguassú	Rio Uruguaý and Porto da União	1.0		
Iguassú to Pirahy	Porto da União and Valle Pirahy	1.0		
Pirahy to Itararé	Valle do Pirahy and Itararé	1.0		
Branch of Ijuhy	Cruz Alta and mouth of Ijuhy Grande	1.0		
Branch to mouth of Iguassú	Guarapuava and Iguassú	1.0		
Branch of Guarapuava	171.600 kilometers line and Seto Quedas	1.0		
Torres to Porto Alegre	Porto das Torres and Porto Alegre	1.0		
Sao Paulo to Villela	Sao Paulo and Villela	1.0	128.000	
Villela to Botucatu	Villela and Botucatu	1.0	182.000	
Botucatu to Tibajy	Botucatu and Tibajy	1.0		410.700
Branch of Itararé	Tatuy and Itararé	1.0		306.000
Jundiáhy to Itá	Jundiáhy and Itá	.96	70.000	
Branch of Piracicaba	Itaicy and Piracicaba	.96	92.000	
Piracicaba to Sao Pedro	Piracicaba and Sao Pedro	.96	59.000	
Junction of sections of the Ituana and Sorocabana	Victoria and Treze de Maio	1.0	15.000	
Branch of Tatuy	Boituva and Tatuy	1.0	22.000	
Branch of Tiété	Cerquillo and Tiété	1.0	8.000	
Itá to Manduzinho	Itá and Manduzinho	1.0		
Manduzinho to Santos	Manduzinho and Santos	1.0		13.100
Siding of João Alfredo		.96	18.000	
Line of Porto Martins	Porto Martins and Sao Manoel do Paraíso	.96	41.000	
Eleuterio to Soledade (trunk, first section)	River Eleuterio and Soledade	1.0	-97.000	174.176
Soledade to Baependy (trunk, second section)	Soledade and Baependy	1.0	22.250	11.050
Baependy to Bom Jardim (trunk, second section)	Baependy and Bom Jardim	1.0		137.808
Bom Jardim to Jacutinga (trunk, second section)	Bom Jardim and Jacutinga	1.0		28.142
Jacutinga to Barra (trunk, second section)	Jacutinga and Barra do Pirahy	1.0	90.000	
Barra to Itaguahy (trunk, third section)	Barra do Pirahy and Itaguahy	1.0	20.000	68.911
Itaguahy to Botafogo (trunk, first section)	Itaguahy and Botafogo	1.0		94.240
Branch of Passa Tres (trunk, first section)	Pirahy and Passa Tres	1.0	15.000	
Branch of Sao José do Paraíso		1.0		
Branch of Alfenas	Pouso Alegre and Alfenas	1.0		
Branch of Lavras	Bom Jardim and Lavras	1.0		15.000
Branch of Lambary	6 kilometers of main line and Lambary	1.0		
Lambary to Pouso Alegre	Lambary and Pouso Alegre	1.0		
Branch of Angra	Itaguahy and Angra dos Reis	1.0		99.100
Montes Claros	Montes Claros and Extrema	1.0		
Alcobaça to Praia da Rainha	Alcobaça and Praia da Rainha	1.0		
Rezende to Bocaina	Suruhy (E. F. Central) and Formoso	1.0	29.000	
Rezende to Bocaina (extension)	Formoso and sources of Mambucaba	1.0	10.000	8.000
Santa Maria to Cruz Alta	Santa Maria and Cruz Alta	1.0		160.400

of Brazil—Continued.

Length of lines.		Under Government supervision.				Under the supervision of the States.			
Surveyed.	Proposed.	Extent with guarantee.	Extent without guarantee.	Guaranteed capital.	Rate.	Extent with guarantee.	Extent without guarantee.	Guaranteed capital.	Rate.
Kiloms.	Kiloms.	Kiloms.	Kiloms.	Milreis.	P. ct.	Kiloms.	Kiloms.	Milreis.	P. ct.
42.000							226.000		
							42.000		
							17.000		
							38.000		
			127.088						
			133.000						
							10.000		
							63.000		
102.000							198.000		
							40.000		
							27.000		
							14.000		
129.480	280.000	129.480	280.000	5,059,590	6				
39.173		39.173							
							32.000		
							11.000		
							23.000		
		65.000		1,950,000	6	33.814		1,250,000	7
								500,000	
		381.520		11,445,600	6	12.000			
340.521		340.521		10,215,630	6				
340.000		380.000		11,400,000	6				
214.000		214.000		6,420,060	6				
292.550		292.550		8,776,500	6				
	387.000	387.000		11,010,000	6				
150.000	446.000	596.000		17,882,600	6				
222.140		222.140		6,664,200	6				
						128.000		2,320,000	7
							182.000		
		410.700		12,321,000	6				
		306.000		9,180,000	6				
						70.000		2,052,600	7
							92.000		
							59.000		
							15.000		
							22.000		
							8.000		
55.000							55.000		
186.900			200.000						
							18.000		
							41.000		
						271.176		10,000,000	7
						33.300		700,000	7
							137.808		
						28.142		6,000,000	7
						90.000		4,200,000	7
							88.911		
			94.240						
							15.000		
37.580						37.580			
188.100							188.100		
171.186						186.186			
48.320						48.320			
92.394							92.394		
			99.100						
150.696						150.696		3,000,000	7
189.000		189.000		5,670,000	6				
							29.000	400,000	5
40.000						18.000	40.000		
		160.400		4,812,000	6				

Private railway companies

Title.	Termini.	Gauge.	Length of lines.		
			In traffic.	In construction.	
			Meters.	Kiloms.	Kiloms.
Paraná.....	Paranaguá and Curitiba.....	1.0	111,000		
Curitiba to Serrinha.....	Curitiba and Serrinha.....	1.0	71,845		
Branch of Porto Amazonas.....	Serrinha and Ponta Grossa.....	1.0	56,654	72,220	
Branch of Rio Negro.....	Serrinha and Rio Negro.....	1.0	30,000	61,000	
Branch of Antonina.....	Morretes and Antonina.....	1.0	16,995		
Pomba.....	Pomba and E. F. Oeste de Minas.....	1.0			
Villa Nova de Lima.....	E. F. C. do R. and Villa Nova de Lima.....	1.0			
Rio Pardo.....	Rio Pardo and the border of Bahia.....	1.0			
Rio Pardo (branch of Montes Claros).....	Rio Pardo and Montes Claros.....	1.0			
Rio Pardo (branch of Grão Mogol).....	Rio Pardo and Grão Mogol.....	1.0			
Border of Minas to Campanha.....	Município de Jaguary and Campanha.....	1.0			
Sao Paulo de Muriaé.....	Sao Paulo de Muriaé and Abre Campo.....	1.0			
Ceará Mirim.....	Natal and Paraiso.....	1.0		45,590	
Ribeirão to Bonito.....	Ribeirão and Bonito.....	1.0	22,000	38,700	
Belem to Paty, Vassouras etc.....		1.0			
Comercio to Sao Francisco Xavier.....	Mangueira and Comercio.....	1.0		67,232	
Nazareth to Crato.....	Nazareth and Crato.....	1.0			
Pelotas to settlement Sao Lourenço (trunk and stat. Marit.).....	Pelotas and margins of Camaquam.....	1.0		141,552	
Cachoeira do Campo.....	E. F. C. do Brazil and Cachoeira do Campo.....	1.0			
Ponta Grossa to Corumbá.....	Ponta Grossa and Nioac.....	1.0			
Pontal to Matto Grosso.....	Pontal (Sao Paulo) and border of Bolivia.....	1.0			
Petrolina to Piauhy.....	Petrolina and shores of Piauhy.....	1.0			
Curvello to Ponta das Aráras.....	Curvello and Serra das Aráras.....	1.0			
Porto Novo to Rio Pardo.....	Porto Novo and settlement Rio Pardo.....	1.0			
Sapucahy-mirim to Piucuhy.....	Sapucahy-mirim and Piucuhy.....	1.0			
Jaguary to Sao José do Paraiso.....	Jaguary and Sao José do Paraiso.....	1.0			
Santa Rita to Sao José de Toledo and Jaguary.....		1.0			
Paraty to Iguape.....	Paraty and Iguape.....	1.0			
Taubaté to Amparo.....	Taubaté and Amparo.....	1.0		72,000	
Central de Alagoas.....	Maceió and Imperatriz.....	1.0	88,000		
Branch of Assembléa.....	35 kilometers and Assembléa.....	1.0	62,000		
Bahia to Alagoinhas.....	Bahia and Alagoinhas.....	1.60	123,340		
Quarahim to Itaqui.....	Mouth of Quarahim and Itaqui.....	1.0	175,500		
Quarahim to Itaqui (extension).....	Itaqui and Sao Angelo.....	1.0		356,800	
Recife to Caxangá.....	Recife and Caxangá.....	1.22	14,600		
Branch of Afflictos.....		1.22	4,000		
Branch of Varzea.....		1.22	9,600		
Central da Bahia.....	Cachoeira and Machado Portella.....	1.067	268,000		
Central da Bahia (extension).....	Machado Portella and Rio das Contas.....	1.067			
Branch of Feira de Santa Anna.....	Cachoeira and Feira de Santa Anna.....	1.0	45,600		
Branch of Orobó.....	Station of Sao Novo and M. Novo.....	1.0			
Natal to Nova Cruz.....	Natal and Nova Cruz.....	1.0	121,000		
Branch of junction with Conde d'Eu.....	Nova Cruz and Independencia.....	1.0		21,826	
Cabedello to Parahyba.....	Parahyba and Porto Cabedello.....	1.0	18,000		
Conde d'Eu.....	Porto da Parahyba and Mulungu.....	1.0	76,000		
Branch of Pilar.....	31 kilometers and Pilar.....	1.0	25,000		
Branch of Independencia.....	Mulungu and Independencia.....	1.0	23,000		
Donna Thereza Christina.....	Imbituba and Minas do Tubarão.....	1.0	111,100		
Branch of Laguna.....	Junction (26 kilometers) and Laguna.....	1.0	5,240		
Recife to Limoeiro.....	Recife and Limoeiro.....	1.0	82,976		
Branch of Nazareth.....	Carpins and Nazareth.....	1.0	13,069		
Branch of Nazareth (extension).....	Nazareth and Timbaúba.....	1.0	45,010		
Montes Claros to Sao João Baptista.....	Montes Claros and Sao João Baptista.....	1.0			
Sao Leopoldo.....	Porto Alegre and Nova Hamburgo.....	1.0	42,850		
Recife to Palmares.....	Recife and Palmares.....	1.60	124,739		
Minas and Rio.....	Cruzeiro and Tres Corações.....	1.0	170,000		
Sao Paulo Railway.....	Santos and Jundiaby.....	1.60	139,000		
Rio Grande to Bagé.....	Rio Grande and Bagé.....	1.0	283,000		
Branch of Timbó.....	Alagoinhas and Timbó.....	1.0	83,000		
Catalão to Palmas.....	Catalão and Palmas.....	1.0			
Total.....			8,672,701	5,371,970	

of Brazil—Continued.

Length of lines.		Under Government supervision.				Under the supervision of the States.			
Surveyed.	Proposed.	Extent with guarantee.	Extent without guarantee.	Guaranteed capital.	Rate.	Extent with guarantee.	Extent without guarantee.	Guaranteed capital.	Rate.
<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Milreis.</i>	<i>P. ct.</i>	<i>Kiloms.</i>	<i>Kiloms.</i>	<i>Milreis.</i>	<i>P. ct.</i>
		111.000		11,492,042	7				
		71.845		2,155,350	6				
		128.874		3,866,220	6				
		91.000		2,730,000	6				
		16.995		509,850	6				
	130.000					130.000		3,250,000	6
	6.000						6.000		
	190.000						190.000		
	150.000						150.000		
	250.000						250.000		
	220.000						220.000		
	135.000					135.000		3,375,000	6
		45.590		1,367,700	6				
		60.700		1,821,000	6				
206.000						206.000		4,984,000	6
44.000	38.768		150.000						
	650.000	650.000		19,500,000	6				
		141.552		4,246,560	6				
	15.000					15.000		200,000	7
	1,400.000		1,400.000						
	1,800.000		1,800.000						
102.100	897.900	1,000.000		30,000,000	6				
	600.000					600.000			
	40.000					40.000		1,000,000	6
	330.000						330.000		
	60.000						60.000		
	80.000						80.000		
100.000	350.000		450.000						
	128.000		200.000						
		88.000		4,553,000	7				
		62.000		1,860,000	6				
		123.340		16,000,000	7				
		175.500		6,000,000	6				
		356.900		10,704,000	6				
						14.600		1,277,771	
						4.000			
						9.600			
193.000		268.000		13,000,000	7				
		193.000		5,790,000	6				
133.000		45.600		3,990,000	6				
		133.000		5,496,052	7				
		121.000						21,826	
		18.000		615,758	6				
		76.000		6,000,000	7				
		25.000							
		22.000							
		111.100		5,609,298	7				
		5.240							
		82.976		5,000,000	7				
		13.069							
			45.010						
	230.000						230.000		
		124.739		11,428,088	5	42.850		199,980	7
		170.000		15,485,253	7	124.739		7,111,111	2
			139.000						
		283.000		13,521,453	7				
		83.000		2,650,000	6				
	800.000	800.000		24,000,000	6				
10,028.949	17,688.088	18,433.565	8,595.632	608,720,435		7,244.261	8,206.808	172,028,835	

OCEAN LINES.

Lines of ocean steamships plying between Rio de Janeiro and foreign ports.

Rio de Janeiro to—	Passenger rates. ^a		
	First class.	Second class.	Third class.
<i>Royal Mail Line (English; semimonthly).</i>			
Santos	40 milreis.....	30 milreis.....	20 milreis.
Montevideo	£10	£6	£3.
Buenos Ayres	£10	£6	£3.
Bahia	110 milreis.....	80 milreis.....	50 milreis.
Maceio	130 milreis.....	90 milreis.....	60 milreis.
Pernambuco.....	150 milreis.....	100 milreis.....	70 milreis.
Lisbon	£25 to £30.....	£16	140 milreis.
Vigo	£26 to £31.....	£17	150 milreis.
Southampton.....	£30 to £35.....	£20	£9.
Antwerp.....	£32 to £37.....	£22	£10.
<i>Pacific Mail (semimonthly both ways).</i>			
Montevideo	£10	£5	£3.
Buenos Ayres.....	£10	£6	£3 10s.
Punta Arenas.....	£25	£15	£8.
Valparaiso	£40	£20	£12.
Caldera	£40	£20	£13.
Arica	£42	£22	£14.
Mollendo.....	£42	£22	£14.
Callao	£45	£25	£15.
Bahia	100 milreis.....	75 milreis.....	50 milreis.
Pernambuco.....	150 milreis.....	100 milreis.....	70 milreis.
Lisbon	£22 to £25.....	£12	140 milreis.
Vigo and Linares.....	£23 to £25.....	£14	150 milreis.
La Pallice.....	£22 8s. to £30 1s.....	£16 15s.....	£10 2s. 1d.
Liverpool	£24 to £30.....	£15	£9.
Plymouth	£24 to £30.....	£15	£9.
London.....	£25 14s. to £31 12s. 6d.	£16 2s. 6d.....	£9 12s.
<i>New Zealand Steamship Company (monthly service).</i>			
Teneriffe	£25	£15	£9.
Plymouth	£30	£15	£10.
London	£30	£15	£10.
<i>Northern Line (freight line; semimonthly).</i>			
New York			
<i>Lampart & Holt Line (semimonthly).</i>			
Santos	40 milreis.....		25 milreis.
Valparaiso ^b			
Victoria	75 milreis.....		
Bahia	100 milreis.....		85 milreis.
Pernambuco.....	120 milreis.....		45 milreis.
New York.....	£30		£10.
Liverpool ^c			
New Orleans ^c			
<i>Prince Line (freight).</i>			
New York.....			
<i>Stoman Line (freight; monthly).</i>			
New York.....			
<i>La Veloce.</i>			
Genoa	1,300 to 750 francs.....	550 to 400 francs.....	60 to 100 francs.
Naples	1,300 to 750 francs.....	550 to 400 francs.....	60 to 100 francs.
<i>Navigazione Generale Italiana (no fixed dates).</i>			
Santos	30 milreis.....		20 milreis.
Genoa	1,000 to 750 francs.....	550 francs.....	100 milreis.

^a Milreis, paper currency, equals 22 cents; pound sterling equals \$4.866; franc equals 19.3 cents.

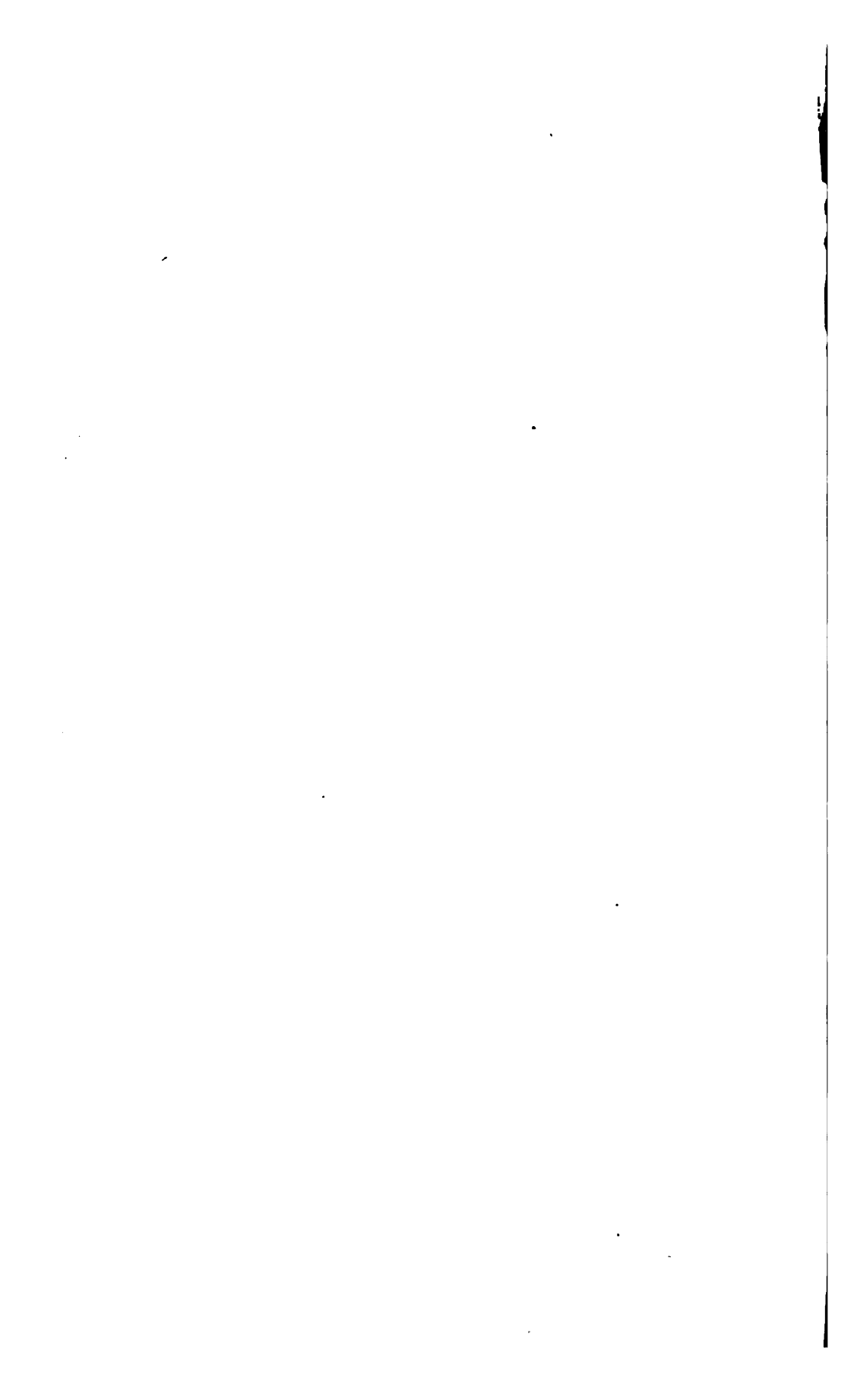
^b As per arrangement.

^c No passengers taken for Liverpool or New York.

Lines of ocean steamships plying between Rio de Janeiro and foreign ports—Continued.

Rio de Janeiro to—	Passenger rates. <i>a</i>		
	First class.	Second class.	Third class.
<i>La Ligura Brasileira (no fixed dates).</i>			
Genoa.....		380 francs.....	55 francs.
Naples.....		400 francs.....	55 francs.
<i>Messageries Maritimes (semi-monthly).</i>			
Montevideo.....	280 to 160 francs.....	80 francs.....	80 milreis.
Buenos Ayres.....	280 to 180 francs.....	80 francs.....	80 milreis.
Bahia.....	200 to 150 francs.....	50 francs.....	35 milreis.
Pernambuco.....	250 to 187½ francs.....	70 francs.....	40 milreis.
Dakar.....	610 to 445 francs.....	250 francs.....	
Lisbon.....	750 to 500 francs.....	250 francs.....	140 milreis.
Bordeaux.....	855 to 605 francs.....	235 francs.....	
Vigo.....	800 to 550 francs.....	250 francs.....	
Corunna.....	800 to 550 francs.....	250 francs.....	205 milreis.
<i>Savill, Sewell de Transports Maritimes à Vapeur (semi-monthly).</i>			
Santos.....	35 milreis.....	25 milreis.....	20 milreis.
Montevideo.....	150 milreis.....	100 milreis.....	60 milreis.
Buenos Ayres.....			
Bahia.....	90 milreis.....	70 milreis.....	40 milreis.
Marseilles.....	650 francs.....	500 francs.....	60 milreis.
Genoa.....	650 francs.....	500 francs.....	60 milreis.
Naples.....	650 francs.....	500 francs.....	60 milreis.
Barcelona.....	650 francs.....	500 francs.....	80 milreis.
<i>Hamburg-Sud-Amerikanische (weekly).</i>			
Santos.....	40 milreis.....		20 milreis.
Victoria.....	60 milreis.....		35 milreis.
Bahia.....	90 milreis.....		45 milreis.
Pernambuco.....	120 milreis.....		60 milreis.
Lisbon.....	£25 to £30.....		120 milreis.
Rotterdam.....	£25 to £30.....		150 milreis.
Hamburg.....	£25 to £30.....		150 milreis.
Copenhagen.....			
<i>Hamburg-Sud-Amerikanische South Brazil Line (tri-monthly).</i>			
Paranagua.....	60 milreis.....		30 milreis.
Sao Francisco, Brazil.....	90 milreis.....		40 milreis.
Desterro.....	100 milreis.....		50 milreis.
Rio Grande.....	150 milreis.....		75 milreis.
Porto Alegre.....			
<i>Hamburg-Sud-Amerikanische South Brazil Line (no fixed dates).</i>			
Santos.....	40 milreis.....		20 milreis.
Rio.....			
Bahia.....	90 milreis.....		45 milreis.
Pernambuco.....	120 milreis.....		60 milreis.
Lisbon.....	£25.....		120 milreis.
Oporto.....			
Havre.....			
Hamburg.....	£25.....		150 milreis.
<i>Norddeutscher Lloyds, Bremen (semi-monthly).</i>			
Santos.....	(b)	(b)	20 milreis.
Bahia.....	(b)	(b)	45 milreis.
Lisbon.....	(b)	(b)	120 milreis.
Antwerp.....	(b)	(b)	150 milreis.
Bremen.....	(b)	(b)	150 milreis.

a Milreis, paper currency, equals 22 cents; pound sterling equals \$4.866; franc equals 19.3 cents.
b None taken.



HIGHWAYS OF COMMERCE.

SUPPLEMENT.

The following reports are reprinted from the regular issues of the Consular Reports and Commercial Relations, and embrace the substance of everything published by the Department since the issuance of the first edition of Highways of Commerce in 1895.

EUROPE.

RAILROAD MILEAGE OF EUROPE.

At the beginning of the year 1897, there were, in all Europe, 159,025 miles of railroads in operation, this being an increase during the year 1896 of 3,144 miles. Of this increase, Austria-Hungary had 806 miles, of which Hungary had 579 miles. In Russia, there was an increase of 555 miles. This, of course, does not include the great trans-Siberian and trans-Caucasian lines, with their 2,883 miles, a large portion of which has recently been opened to traffic. Germany increased her railroad mileage 579 miles—the same as Hungary—the Kingdom of Prussia receiving 387 miles.

The countries of Europe having the greatest mileage in proportion to their areas are, in their order: Belgium, 3,582; Great Britain and Ireland, 21,217; Germany, 29,355; Switzerland, 2,209; Holland, 1,608; France, 25,089. The other countries of Europe have the following railroad mileages: Austria, 18,951; Denmark, 1,605; Spain, 7,615; Greece, 590; Italy, 9,349; Luxemburg, 269; Portugal, 1,451; Roumania, 1,784; Russia, proper, 22,455; Finland, 1,484; Servia, 335; Sweden, 6,073; Norway, 1,201; Turkey and Bulgaria, 1,507; the islands of Jersey, Malta, and Man, 68 miles.

JAMES T. DU BOIS,
Consul-General.

ST. GALL, *January 28, 1898.*

AUSTRIA-HUNGARY.

TRANSPORTATION FACILITIES OF REICHENBERG AND PRAGUE.

Goods are shipped to and from America by way of Bremen or Hamburg. The railway freight rates from those points are the same. The Elbe River offers a cheaper freight way, and it is used to a great extent for goods of bulk, except in the winter, when it is closed. River freight rates are 10 to 15 cents per 100 kilograms (220.46 pounds) from Reichenberg, the point on the Elbe nearest to Hamburg. The all-rail rates to Bremen and Hamburg average about five times as much. A new railway, to be opened for business next year, is now being built from Reichenberg to Leitmeritz, on the Elbe, and will bring that river within about 50 miles of this city, shortening the distance thereto one-half. This new line will be of great value to the commerce of this section.

From New York to Reichenberg, and vice versa, the freight-transit time by all rail, via Hamburg or Bremen, is about four weeks; via the Elbe route and Hamburg, twice as long.

Freight rates have not changed during the present year, and fluctuate only by the Elbe route—low water increasing and high water decreasing rates. Such an increase occurred during the past summer.

The city of Prague, being situated on the river Moldau, which flows into the Elbe, is endeavoring at a large expense to deepen and widen the channel of the Moldau so as to enable vessels from Hamburg to come up as far as Prague.

A new railroad is being built between the famous watering places, Karlsbad and Marienbad, in Bohemia, and it will be completed about the 1st of December, 1898. The distance between the two places is only 21 miles, and the road is being built by a private company. This will eventually cause a change to be made in the present time card of the Buschtehrader road. Until now, a person had to go via Eger to get to Marienbad, but by this road one can go direct from Karlsbad.

FRANK W. MAHIN,

Consul.

REICHENBERG, *October 31, 1898.*

COMMUNICATION BETWEEN TRIESTE AND THE UNITED STATES.

There are at present two regular lines of steamships plying between Trieste and ports of the United States:

1. The Austro-Americana Steamship Company, which sails under the Austro-Hungarian flag. It was organized about three years ago, and receives a large tonnage subsidy from the Austrian Government. It has now 10 steamers, with from 3,300 to 4,400 tons capacity each, and maintains a fairly regular fortnightly service between Trieste and the United States. On their return voyage these steamers sail alternately from New York and New Orleans, and call occasionally at other American ports. Sailings take place at least once a month from both New York and New Orleans. The steamers seldom get full cargoes for Trieste, and are therefore obliged to fill up with goods consigned to intermediate ports, as Genoa, Naples, and Venice. During the cotton-export season, a steamer of this line is always kept loading at New Orleans.

The principal office of the Austro-Americana Steamship Company is at IV Frankenberggasse 7, Vienna. Agents for this line are: In Trieste, G. Tarabochia & Co.; in Vienna, Schenker & Co.; in New York, Barber & Co.; in New Orleans, Meletta & Stoddart; in Galveston, W. Paar & Co., and in Savannah, Wilder & Co.

2. The Mediterranean and New York Steamship Company, Limited, which owns 7 steamers, varying from 2,200 to 3,300 tons dead weight cargo capacity. The steamers sail under the British flag, with headquarters at Liverpool. They maintain a regular service between New York and Mediterranean and Adriatic ports, with sailings twice a month.

The line owns commodious wharves for the use of its steamers in Brooklyn. Its principal office is at 26 Preeeson's Row, Liverpool, and Phelps Bros. & Co., act as agents at New York, Boston, Philadelphia, and Baltimore.

BILLS OF LADING AND FREIGHT RATES.

Both companies convey goods to any place in the interior and issue through-rate bills of lading. Owing to competition, there are now no regular tariff rates. Sea freights depend on the condition of the market, and must be negotiated from time to time with the companies' agents at the various ports. Recently, rates from New York to Trieste have averaged about 25 shillings (\$6.08) per ton, while rates from Trieste to New York have occasionally been as low as 6 shillings (\$1.45) per ton.

The railroad rates from this port to the principal cities of Austria-Hungary (reported to the Department under date of May 14, 1898) are as follows:

FREIGHT RATES IN AUSTRIA.

Railroad freight rates (per 100 kilograms) for the principal commodities imported from the United States into Austria-Hungary.

Articles.	From Trieste to—							
	Vienna.		Prague.		Budapest.		Graz.	
	Florins.	United States currency.	Florins.	United States currency.	Florins.	United States currency.	Florins.	United States currency.
Iron and steel ware:								
Less than 5,000 kilograms ¹ ..	1.45	\$0.58	2.15	\$0.87	1.67	\$0.67	0.99	\$0.40
5,000 kilograms and over...	1.19	.48	1.41	.57	1.44	.58	.87	.35
10,000 kilograms and over...	1.11	.44	1.41	.57	1.44	.58	.78	.31
Agricultural machinery:								
Less than 5,000 kilograms...	2.04	.82	2.99	1.22	1.67	.67	1.64	.66
5,000 kilograms and over...	1.78	.72	2.10	.86	1.44	.58	1.30	.62
10,000 kilograms and over...	1.19	.48	1.41	.57	.99	.40	.78	.31
Bicycles:								
Less than 5,000 kilograms...	3.75	1.51	2.99	1.22	3.70	1.49	3.35	1.35
5,000 kilograms and over...	1.78	.72	2.40	.92	1.49	.60	1.41	.57
10,000 kilograms and over...	.91	.36	1.88	.76	1.49	.60	1.30	.40
Paper:								
Less than 5,000 kilograms...	1.99	.76	2.99	1.22	1.67	.67	1.64	.66
5,000 kilograms and over...	1.66	.67	2.15	.87	1.44	.58	1.34	.54
10,000 kilograms and over...	1.30	.52	1.64	.66	1.44	.58	1.30	.62
Cotton:								
Less than 5,000 kilograms...	1.96	.79	2.66	1.07	1.67	.67	1.20	.48
5,000 kilograms and over...	1.75	.70	2.15	.87	1.44	.58	1.20	.48
10,000 kilograms and over...	1.28	.51	1.64	.66	1.44	.58	1.20	.48
Oil:								
Less than 5,000 kilograms...	1.96	.79	2.99	1.22	1.67	.67	1.20	.48
5,000 kilograms and over...	1.75	.70	2.15	.87	1.44	.58	1.20	.48
10,000 kilograms and over...	1.42	.57	1.64	.66	1.44	.58	1.20	.48
Raw iron:								
Less than 5,000 kilograms...	1.45	.58	2.15	.87	1.67	.67	.92	.37
5,000 kilograms and over...	1.19	.48	1.64	.66	1.44	.58	.92	.37
10,000 kilograms and over...	.84	.35	1.09	.44	.76	.30	.62	.25
Blue vitriol:								
Less than 5,000 kilograms...	2.04	.82	2.99	1.22	1.67	.67	1.68	.68
5,000 kilograms and over...	1.75	.70	1.64	.66	1.49	.60	1.30	.52
10,000 kilograms and over...	1.28	.51	1.41	.57	1.49	.60	.78	.31
Smoked and salted meats:								
Less than 5,000 kilograms...	2.04	.82	2.99	1.22	1.67	.67	1.68	.68
5,000 kilograms and over...	1.95	.78	2.40	.94	1.49	.60	1.68	.68
10,000 kilograms and over...	1.71	.69	1.88	.76	1.49	.60	1.68	.68
Lard:								
Less than 5,000 kilograms...	1.96	.79	2.99	1.22	1.67	.67	1.20	.48
5,000 kilograms and over...	1.75	.70	2.40	.97	1.49	.60	1.20	.48
10,000 kilograms and over...	1.56	.63	1.88	.76	1.49	.60	1.17	.47

¹ 1 kilogram = 2.2046 pounds.

Railroad freight rates (per 100 kilograms) for the principal commodities imported from the United States into Austria-Hungary—Continued.

Articles.	From Trieste to—					
	Sina.		Salsburg.		Vienna, if direct from America.	
	Florins.	United States currency.	Florins.	United States currency.	Florins.	United States currency.
Iron and steel ware:						
Less than 5,000 kilograms ¹	1.63	\$0.66	1.61	\$0.65		
5,000 kilograms and over.....	1.10	.44	1.09	.44		
10,000 kilograms and over.....	1.08	.43	1.09	.44		
Agricultural machinery:						
Less than 5,000 kilograms.....	2.51	1.01	1.61	.65		
5,000 kilograms and over.....	1.63	.63	1.09	.44		
10,000 kilograms and over.....	1.08	.43	1.09	.44		
Bicycles:						
Less than 5,000 kilograms.....	5.46	2.21	5.22	2.11		
5,000 kilograms and over.....	1.63	.66	2.14	.86		
10,000 kilograms and over.....	1.47	.59	.82	.33		
Paper:						
Less than 5,000 kilograms.....	2.00	.81	2.48	1.00		
5,000 kilograms and over.....	1.63	.66	1.61	.65		
10,000 kilograms and over.....	1.47	.59	1.61	.65		
Cotton:						
Less than 5,000 kilograms.....	2.20	.89	2.48	1.08	1.55	\$0.62
5,000 kilograms and over.....	1.63	.66	1.61	.65	1.46	.59
10,000 kilograms and over.....	1.30	.62	1.61	.65	1.28	.51
Oil:						
Less than 5,000 kilograms.....	2.38	.96	2.48	1.00	1.55	.62
5,000 kilograms and over.....	1.63	.66	1.61	.65	1.45	.58
10,000 kilograms and over.....	1.30	.62	1.09	.44	1.30	.52
Raw iron:						
Less than 5,000 kilograms.....	1.63	.60	1.61	.65		
5,000 kilograms and over.....	1.10	.44	1.09	.44		
10,000 kilograms and over.....	.72	.29	.82	.33		
Blue vitriol:						
Less than 5,000 kilograms.....	2.51	1.01	2.48	1.00	1.55	.62
5,000 kilograms and over.....	2.51	1.01	2.14	.86	1.20	.48
10,000 kilograms and over.....	2.51	1.01	1.88	.76	1.20	.48
Smoked and salted meats:						
Less than 5,000 kilograms.....	2.51	1.01	2.48	1.00	1.55	.62
5,000 kilograms and over.....	2.51	1.01	2.14	.86	1.55	.62
10,000 kilograms and over.....	2.51	1.01	1.80	.72	1.55	.62
Lard:						
Less than 5,000 kilograms.....	2.49	1.00	2.48	1.00	1.55	.62
5,000 kilograms and over.....	2.49	1.00	2.14	.86	1.55	.62
10,000 kilograms and over.....	2.49	1.00	1.88	.76	1.55	.62

¹ 1 kilogram=2.2046 pounds.

OTHER MEANS OF COMMUNICATION AT TRIESTE.

The fast line from London, England, to Alexandria, Egypt, via Trieste, which was inaugurated about two years ago, is still maintained. Passengers leave London on Monday, arrive here on Wednesday, and at Alexandria on the following Sunday. Last year the Austrian Lloyd, aided by a Government subsidy, also commenced running fast steamers between this port and the various cities on the Dalmatian coast. The line has not been well patronized so far, but it is hoped that as the natural and historic attractions of Dalmatia become more generally known the line will become more profitable. A large hotel, with all modern conveniences, has been erected at Ragusa, the "palm" city of Austria, and strong efforts are being made to commend this place to the favorable consideration of invalids as the ideal winter resort of southeastern Europe.

During the past year, the Monfalcone-Cervignano Railway was extended to San Giorgio di Nogaro, a small town situated on the line

between Italy and Austria. Here it connects with the Italian railway to Mestre and Venice. By the completion of the Austrian branch the distance from Trieste to Venice by rail has been shortened 45 miles.

The railway communication between Trieste and the Austrian inland is still limited to one line, the Austrian Southern Railway, which runs from Trieste to Vienna. Many efforts have been made in years past by the people of Trieste to obtain another, but without success. There has been before the Imperial Government a project for constructing a road between Gorizia and the town of Predil, in the province of Carinthia. Such a road would give Trieste an outlet to the western provinces of the Empire and to southern Germany, and would greatly increase the importance of this port.

FREDERICK W. HOSSFELD,
Consul.

TRIESTE, *October 3, 1898.*

BELGIUM.

MEANS OF COMMUNICATION AT ANTWERP.

As a seaport, Antwerp has (geographically) unequalled advantages, situated as it is on a stream through which vessels of the heaviest tonnage pass, with the facility of reaching their wharves without reducing their ballast. Its harbor is safe and well protected.

Inland, Antwerp is in direct communication with central Europe by means of numerous railways, and by a very intricate but extended network of canals, rendering it the most accessible of European shipping ports. To these advantages are added lesser dock rates than those of other ports, facilities for coaling and provisioning, important labor-saving installations for loading, unloading, storing, etc.

NAVIGABLE WATERWAYS.

The following enumeration of water courses and canals connecting Antwerp with its interior industrial and commercial centers, as well as with the different countries surrounding it, together with a description of the various anchorages, will fully account for the amount of tonnage of the boats making use of these water communications for the purposes of inland traffic.

On the north, the Hansweert Canal connects the Escant with the southern canals of Holland, the River Meuse, and the Rhine. This canal has an anchorage of about 6 meters (19 feet) at low water and a depth of 8 meters (26 feet) at high water. The locks have openings of about 15 meters (49 feet), allowing the passage of several Rhine boats at a time.

The Hansweert Canal, opened October 11, 1867, takes the place of the former ways of communication, which were up to that time through the southerly branch of the Escant, closed by a dam at Woensdrecht.

A second canal, that of Walcheren, passing through Middelbourg, replaces that of the Sloc, barred in 1871.

Antwerp is connected with the Meuse on the east by the Campine Canal and its several branches.

The canal joining the Meuse to the Escaut comprises three sections the first constructed in 1843-44, the second in 1846, with a branch connecting Turnhout, and the third in the year 1856. The first two are of the grand-section order since 1865.

This Meuse-Escaut junction canal has a branch connecting it with the military camp of Beverloo, situated at Bourg Léopold, and the town of Hassel. Another branch passes at Turnhout. The Meuse-Escaut junction joins at the Belgian frontier, near Bocholt, the canal of Bois le Duc to Maestricht, built 1823-1826, widened in 1864-1870, to which is joined the Maestricht-Liége Canal.

Navigation upon the Meuse-Escaut junction canal is afforded by locks having an opening of 7 meters (22 feet) and a length varying between 50 and 56 meters (164-183 feet).

The anchorage in all these different canals has a depth of 2.10 meters (6 feet 9 inches), excepting the eastern branch at Turnhout, which has only 1.65 meters (5 feet 5 inches).

The Meuse-Escaut junction canal is also connected with the rivers Nethe and Rupel at Grobbendonck by the Little Nethe.

The port of Antwerp is connected on the south by the river Sambre with the manufacturing center of Charleroi and the north of France, viz:

1. The River Rupel, subject to tidal variations, allows an anchorage varying from 1.60 to 5.25 meters (5 feet 3 inches to 17 feet 2 inches).

2. The canal of Willebroeck, opened to navigation October 12, 1561, widened and deepened between 1830-1835 to allow an anchorage of 3.10 meters (10 feet). The maritime lock has an opening of 7.50 meters (24 feet 7 inches) and a length of 32 meters (104 feet 10 inches).

3. The canal of Charleroi, constructed in 1832, enlarged and improved between 1854-1857, has an anchorage of 2.40 meters (7 feet 9 inches), with locks measuring 5.20 by 40.80 meters (17 by 133 feet).

Canal boats of large dimensions can run between Antwerp and Charleroi, with a draft of water of 2.40 meters (7 feet 9 inches). The locks are sufficiently large to allow the passage of boats of 300 tons burden.

The canal of Charleroi to Brussels, joined to the Sambre River and to the canal of the Sambre and d'Oise, has an anchorage of 2 meters (6½ feet), with locks having openings of 5.20 meters (17 feet) by 37.40 to 37.60 meters (122-123 feet) in length.

This canal is furthermore connected with the Meuse, near Namur, by the lower part of the canalized river Sambre, allowing anchorage of 2.10 meters (6 feet 9 inches), passage of 5.14 meters (16 feet 9 inches), and a length of locks from 45.65 to 47.26 meters (150 to 155 feet).

The river Meuse, canalized 1870-1880 between Namur and the French frontier, has a draft of water of 2.10 meters (6 feet 9 inches) and locks

with openings of 12 meters (39 feet 4 inches) and 100 meters (328 feet) in length. This canal connects the southeast section of the canals to that of the French Ardenne section.

The port of Antwerp is also in communication with Louvain, by the Rupel and the Canal Louvain, as far as Sennegeat. This canal, opened in 1752, was considerably improved from 1760 to 1763, and then again between 1836 and 1837. Its depth is 3.60 meters (11 feet 9 inches) and its locks have passageways of 8.20 meters (26 feet 10 inches) in width, with lengths of 56 meters (183 feet).

The Lower Escaut is connected with all the navigable section of the north of France in the following manner: First, directly by way of the Upper Escaut from Ghent to the French frontier, with a minimum draft of water of 2.10 meters (6 feet 9 inches) and locks measuring 6.50 by 41.60 meters (21 by 134 feet), and in the French section with anchorages of 2 meters (6½ feet), with locks 34 meters (111 feet) in length and openings varying from 5.20 to 6.40 meters (17 to 20¾ feet).

West of Audenarde, it communicates with the River Lys through the canal of Bossuyt Courtrai, constructed in 1858-1863, with an anchorage of 2.20 meters (7 feet 3 inches) and locks 5.20 by 37.65 meters (17 by 123½ feet), and with the Deule by the Canal d'Espierre and that of Roubaix, with a draft of water of 2 meters (6½ feet) and locks 38.50 and 39.60 meters (126 and 129 feet), with openings of 5.20 meters (17 feet).

At Antoing, the Lower Escaut meets the Pommerœul-Antoing Canal, constructed in 1826, forming a junction with the Dendrée and the Canal Mons-Condé, having anchorages of 2.20 to 2.30 meters (7 feet 3 inches to 7 feet 6 inches), with locks of 40.80 meters (133 feet), affording a width of passage of 5.20 meters (17 feet).

The Escaut on French soil receives the Scarpe, navigable as far as Arras, with a water draft of 2 meters (6½ feet), while at Condé it meets the Canal Condé to Mons (Belgium). This waterway, up to the point of junction with the Antoing Canal, has only a draft of 2 meters (6½ feet), with locks 5.20 by 37.50 meters (17 by 123 feet). Beyond, anchorage varies from 2.20 to 2.40 meters (7 feet 3 inches to 7 feet 8 inches), and the length of locks is 5.20 by 41.06 meters (17 by 134 feet).

Very important work has been done to make a connection between the Mons-Condé Canal and the central branch near Houdeng, so as to link by a uniform anchorage of 2.10 meters (6 feet 9 inches) the Escaut via the Antoing-Mons Canal to the canal of Charleroi, which offers an anchorage of that depth. The locks of all these canals have a measurement of 5.20 meters in width by 40.80 meters in length (17 by 133 feet).

Mechanical appliances are in process of construction, viz, four hydraulic elevators for boats for the purpose of enabling them to overcome the difference of level of 66.30 meters (217 feet). One of these elevators is now in use at Houdeng.

At the present time, the central canal is operated by mechanical appliances throughout two-thirds of its course.

This connection of the Mons-Condé Canal with the central branch will bring about direct communication, by means of a broad canal on Belgian territory between the plain of the Upper Escaut and the valley of the Sambre.

The Upper Escaut is joined to the St. Quentin Canal, to the canal of the Somme via Ham, and to the canal of the Oise by a branch communicating with the canal of the Sambre at the Oise. Navigable in all its courses for vessels of 2 meters ($6\frac{1}{2}$ feet) draft, it has locks of 31 meters (101 feet), with passageways of from 5.20 to 6.40 meters (17 to $20\frac{3}{4}$ feet). The canal of the Sensée joins it to the Scarpe and the Deule at Douai, France.

An existing project for a northern canal toward Paris would strike the canal of the Sensée, reaching the canal of the Somme near Péronne, following the direction from Ham to Paris, with anchorages of 2.20 meters (7 feet 3 inches) and locks 5.20 by 38.50 meters (17 by 126 feet).

Another plan would be to effect a direct junction of the Upper Escaut with the Meuse by a branch connecting the Escaut with the Sambre between Denain and Landrecies and the Sambre with the Meuse from Landrecies to Mézières, with anchorages of 2.20 meters (7 feet 3 inches) and locks 5.20 by 38.50 meters (17 by 126 feet).

Second. The Lower Escaut is further connected by the Dendrée (canalized 1863-1867) from Termonde to Ath, with a depth of water from 2.10 to 2.30 meters ($6\frac{3}{4}$ to $7\frac{1}{2}$ feet) and locks 5.20 meters (17 feet) by 41.77 meters to 42.65 meters (137 to 143 feet) long. The canal Blaton to Ath, constructed in 1868, places the Dendrée in communication with the canal Pommerœul to Antoing and its several branches.

Third. By the River Lys, which in its course from Ghent to the French frontier toward Armentières has anchorages of 2.10 meters (6 feet 9 inches), with locks 5.20 by 42.20 meters (17 by 138 feet). The Lys is connected with Roulers by a branch constructed in 1872, and to the Escaut by the canal Bossuyt to Courtrai.

On the French frontier, the Escaut reaches Lille and Douai by the canal of the Deule, having anchorages of 2 meters ($6\frac{1}{2}$ feet) and locks 5.20 meters (17 feet) by 38.70 to 40.40 meters (126 to 132 feet).

In France, this river is connected with the canals of Aire and Neufossé and their ramifications. Lastly, the Escaut is in communication with the western section of Belgian canals in the following manner:

1. By the Durme and its branches.

2. By the canal Ghent to Bruges, of the grand section order, with a depth of water of 2.50 to 2.90 meters (8 feet 2 inches to 9 feet 6 inches), extending between Ghent and the canal from the source of the Lys, and a depth of 2.20 to 2.50 meters (7 feet 3 inches to 8 feet 2 inches) from this point up to Bruges.

Also by the canal Bruges to Ostende, having a depth of 4.30 to 4.50 meters (14 feet to 14 feet 8 inches), and which, branched to the canal

of Plasschendæle, has an anchorage of 2.25 to 2.50 meters (7 feet 4 inches to 8 feet 2 inches) up to Nieuport and of 2.20 meters (7 feet 3 inches) from Nieuport to Furnes. This canal is in direct communication with the Yser, joining it to the canal of Ypres, which has a depth of 1.70 to 2.25 meters (5 feet 6 inches to 7 feet 4 inches) and a lock 6.20 by 37 meters (20 by 121 feet).

The canal Ypres to Commines, in course of construction, will add to all these different routes of communication a way to the basin of the Lys, by the use of locks 5.20 by 45.50 meters (17 by 149 feet), with anchorages of 2 meters (6½ feet).

The canal of Loo, with an anchorage of 1.90 meters (6 feet 3 inches), unites the Yser to Furnes.

The canals Furnes to Dunkerque and Furnes to Bergues join the canals of Nieuport to all the navigable sections of the Pas de Calais, but they have a draft of water of only 1.25 to 1.30 meters (4 feet to 4 feet 3 inches), which ultimately will be increased to that of 2 meters (6½ feet).

This vast system of navigable waterways to Antwerp, covering an area of over 2,000 kilometers (1,243 miles), is a medium conferring great facilities for transportation.

From statistics given by the bureau of hydraulics, the total amount of inland transportation, consisting of coal, coke, minerals, metals, plaster, lime, cement, stone, slate, marble, ceramics and glassware, wood, agricultural products, and general merchandise was estimated for the year 1893 to have been, in tons of 1,000 kilograms (2,204 pounds), as follows: Through the Upper Escaut and the Dendrée, east of Termonde, 906,700 tons. Through the Rupel and its annex of canals, 1,462,000 tons. Through the Lower Escaut, west of Antwerp, 1,910,000 tons. By way of the junction canal from the Meuse to the Escaut and by that of Turnhout, 791,000 tons.

The total movement in transit, by inland boats on the Escaut west of Antwerp, amounted to 1,895,497 tons on incoming and 1,627,476 tons on outgoing boats, giving a total for 1893 of 3,522,973 tons, as compared with 3,500,000 in 1881.

The period embracing the most rapid development of inland navigation in Belgium occurred between the years 1820 and 1860.

The following statistics give the increase by periods of ten years:

Canal development in Belgium.

[1 meter = 39.37 inches.]

Years.	Area.	Amount added.
	<i>Meters.</i>	<i>Meters.</i>
1820-1830.....	1,518,444	
1830-1840.....	1,707,120	88,676
1840-1850.....	1,818,520	111,409
1850-1860.....	1,919,731	101,202
1860-1870.....	1,976,011	56,280
1870-1880.....	2,022,919	46,908
1880-1890.....	2,036,710	13,800

This progressive movement ceased when, owing to the greater convenience and rapidity of transport by that means, the establishment of numerous railways diverted traffic, though in many instances at much greater expense.

Latterly, attention has been given principally to the improvement of existing canals, widening or deepening certain ones, so as to obtain more direct communication with others and render it possible for boats to pass through at all points, making them conform to an uniform type and be of a depth adapted to present commercial necessities.

RAILWAY FACILITIES OF ANTWERP.

Antwerp is not only favored by reason of its facilities of communication by water, but is well served by railways in direct communication with all parts of Belgium, Holland, Central Germany, Alsace and Lorraine, Switzerland, Italy, and the north and east of France. By its system of railways it is connected with North and Central Germany by three main arteries, namely, Antwerp-Gladbach, Antwerp-Aix-le-Chapelle, via Hasselt and Maestricht, and Antwerp-Cologne, via Malines, Liège, Verviers, Herbestal, and Bleyberg. The important transit line from Brussels to Namur and Luxembourg affords Antwerp direct access, via Sterpenich, to Alsace-Lorraine, Switzerland, and Italy.

Connections with the railways of the east and north of France are established by numerous lines in the provinces of Luxembourg, Namur, Hainaut, and Occidental Flanders, in the several directions of Longwy, Montmédy, Givet, Anor, Maubege, Valenciennes, Douai, Lille, Armentières, Hazelbrouck, and Dunkerque.

On the north, connection in the direction of Holland is via Rosendaal, Tilbourg, and Eindhoven.

Antwerp is a nearer port than Havre for northern France, Alsace-Lorraine, and Germany. It is also a rival port as regards the eastern districts of France and Switzerland. For a great part of Germany, it is less distant than either Bremen or Hamburg, and can compete advantageously with these two ports, as well as with those of Holland.

The St. Gothard Railway, inaugurated December, 1881, and opened to traffic in June, 1882, has contributed greatly toward the development of the shipping trade at Antwerp. By this means, the communication so advantageously established between the cities of Genoa and Milan, and Basel, Zurich, and northern Switzerland, has had the effect of directing transit trade to Belgium through the consequent impulse given to trade between western European countries and the Orient, as well as to that between northern European ports and northern Italy.

Already, by the time of the opening of the Mont Cenis tunnel in 1872, the railways of Belgium, Luxembourg, and Alsace had diverted to their channels a large part of the oriental transit trade, owing to their reduced rates.

The detour formerly necessary between Basel and Geneva being done away with, direct connection between Antwerp, Ostend, and Brindisi was opened. For Milan, the nearest northern port is Antwerp. A comparison of the distances from Milan to French and Belgian ports is as follows:

FRANCE.	
Via Mont Cenis:	Kilo- meters. Miles.
Calais-Milan	1, 354=841
Boulogne-Milan	1, 311=814

BELGIUM.	
Via the St. Gothard:	
Ostend-Milan	1, 258=791
Antwerp-Milan	1, 178=731

This gives Antwerp an average of 133 kilometers (83 miles) advantage over Boulogne and 176 kilometers (110 miles) over Calais, a large percentage when the difference of expense is considered. Even over Ostend Antwerp has the advantage.

Austria, fearing to lose her traffic by the Brenner, the earliest of the Alpine passes (dating from 1864), completed the tunnel of Arlberg November 5, 1883, uniting Austrian Tyrol to eastern and northern Switzerland, and enabling merchandise to be forwarded without transshipment to Trieste from western Europe and Venice on the one hand, and Vienna and Constantinople on the other.

France, appreciating the advantages that the St. Gothard offered to Germany and the Belgian ports, is at present negotiating with Italy and Switzerland for piercing a tunnel through the Simplon, in order to compete with the St. Gothard.

The Simplon route would materially reduce the distance between Milan and the French ports of the English Channel, giving: Calais-Milan, 1,238 kilometers (768 miles), and Boulogne-Milan, 1,195 kilometers (742 miles). Notwithstanding the above, Antwerp would still have the advantage of 60 kilometers (37 miles) over Calais and 17 kilometers (11 miles) over Boulogne. Should this route be established, Antwerp will not fear competition, owing to the high rates of tariff demanded on merchandise in transit by the French railways.

A large proportion of Italian products destined for England, passing through the St. Gothard, are shipped at Antwerp for English ports. The Indian trade from the north of Europe, en route for Brindisi via the St. Gothard, passes through Belgium in transit via Ostend-Basel.

In order to compare the relative distances of the ports of other countries, the following table, taken from the *Moniteur Industriel* of 1882, will show the advantage enjoyed by Antwerp:

	Kilometers. Miles.
Antwerp to Brindisi by the St. Gothard.....	1, 954=1, 214
Ostend to Brindisi by the St. Gothard.....	2, 030=1, 261
Dunkerque to Brindisi by the St. Gothard.....	2, 090=1, 298
Boulogne to Brindisi by the St. Gothard	2, 098=1, 303
Calais to Brindisi by the St. Gothard	2, 111=1, 311
Bremen to Brindisi by the Brenner	2, 108=1, 309

	Kilometers. Miles.
Hamburg to Brindisi by the Brenner.....	2, 162 = 1, 343
Lubeck to Brindisi by the Brenner.....	2, 188 = 1, 359
Havre to Brindisi by the Mont Cenis.....	2, 137 = 1, 327

The following is a comparative table of the lengths of Belgian railways, by periods of five and tens years:

[1 meter = 39.37 inches.]

Periods.	Belgian railways owned by—		Total length.	Total increase.
	The State.	Corporations.		
December 31—	<i>Meters.</i>	<i>Meters.</i>	<i>Meters.</i>	<i>Meters.</i>
1840.....	333, 803	32, 300	336, 103	
1850.....	624, 219	273, 000	897, 219	531, 116
1860.....	748, 606	980, 770	1, 729, 376	832, 157
1870.....	868, 682	2, 028, 310	2, 896, 992	1, 167, 616
1880.....	2, 791, 514	1, 320, 392	4, 119, 906	1, 214, 914
1890.....	3, 209, 000	1, 281, 000	4, 470, 000	350, 094
1895.....	3, 321, 000	1, 482, 000	4, 803, 000	333, 000

Since 1860, railway growth coincides with the impulse given it by private corporations. The abolishing of toll rates on the Escaut, and the establishing of main transit lines toward central Germany and Switzerland, for which Antwerp is the most available shipping port, are improvements dating from that period. Since the Franco-German war and the opening of the Mont Cenis tunnel (1871), railway development in Belgium has been still more marked.

Since that year, the Belgian Government has added to its own lines by purchase: In 1871, the railways of the coal region of Hainaut; in 1872, the Grand Duchy (junction); in 1873, the Grand Luxembourg; in 1880, Antwerp to the Dutch frontier; in 1878, a portion of the Flanders section; in 1897, the Antwerp-Ghent and the Ghent-Eecloo, with the Grand Central and annexes.

Tariffs of rates are thus simplified, time gained, and economy assured.

GEO. F. LINCOLN,

Consul.

ANTWERP, October 29, 1897.

LIST OF THE REGULAR STEAMSHIP LINES OCCUPYING THE PIERS OF THE ESCAUT.

	No. of pier.
Great Eastern Railway Company, Harwich.....	1
Wilson & Co., Hull.....	2
Bailey & Leatham, Hull.....	3
Tyne Steamship Company, Newcastle.....	4
Cork Steamship Company, Manchester.....	5
Great Central Railway Company, Grimsby.....	6
Goole Steamship Company, Goole.....	7
Steamship lines running to London.....	8
General Steamship Company, London.....	9
Steamship lines running to London.....	10
Goole Steamship Company, Goole.....	11
George Gibson & Co., Leith.....	12

	No. of pier.
Cork Steamship Company, Liverpool, Greenock, and Glasgow	13
Peninsular and Oriental Steamship Company, India and China	14
Union Steamship Company, The Cape	15
Compagnie Maritime Belge du Congo, Congo	16
Royal Mail Packet Company, Brazil, Uruguay, Argentine Republic	17
Norddeutscher Lloyd, Brazil, Uruguay, Argentine Republic	18
Norddeutscher Lloyd, China	19
Norddeutscher Lloyd, Australia	20
Deutsche Dampfschiffahrts Gesellschaft, Kosmos, Chile, Peru	21
Hamburg Pacific Dampfschiffs Linie, Chile, Peru	22
Telegraaf, Rotterdam	23
Hansa St. Lawrence Line, Quebec, Montreal (summer); Boston and Halifax (winter)	24
Hansa Linie de Brême, Kurrachel, Bombay	25
Deutsch Australische Dampfschiffs Gesellschaft, Australia	26
Rickmers Linie, India, China, Japan	27
Nippon Yusen Kaisha, Japan	28
Puritan Line, Boston and Baltimore	29
Hansa Linie de Brême, Madras, Calcutta	30
Lamport and Holt Linie, Brazil, Uruguay, Argentine Republic	31
Red Star Line, New York	32
Red Star Line, Philadelphia	33
Phoenix Line, New York	34

DOCKS.

Foonyade Actie Bolag Gotha, Gothenbourg	35
Bristol Steam Navigation Company, Plymouth, Bristol	36
Palgrave Murphy Company, Dublin, Belfast	37
Ostlandsche Lloyd, Christiania	38
Kirsten Line, Hamburg	39
H. J. Perlbach & Co., Hamburg	40
Det Forenede Dampskib Selskap, Christian Grubel and J. G. Reinold, Baltique ..	41
Dampfschiffahrts Gesellschaft Neptuni, Portugal	42
Steamship lines running to Bristol and Gloucester	43
Ad. Deppe, Bordeaux	44
Société Thétis, Spain (Atlantic)	45
Société Thétis, Spain (Mediterranean)	46
Steamship line running to the Black Sea	47
L. Westcotts & Co., Black Sea	48
Société navale de Pouest, Håvre	49
Det Forenede Dampskib Selskap, Black Sea	50
Hansa Linie, Uruguay and Plata	51
Deutsche Levant Linie, Levant	52
Stockholm Augfartygs Rederei Bolaget. Finska Augfartygs Aktie Bol, Sweden and Finland	53
River Plata Line, La Plata	54
Messageries maritimes de France, Marseilles	55
Johnson Line, Danube	56
Société John Cockerill, Spain	57
Société John Cockerill, Mediterranean	58
Knott's Prince Line, Egypt, West Indies, Plata	59

GEO. F. LINCOLN,

*Consul.*ANTWERP, *November 12, 1897.*

OCEAN FREIGHT RATES.

Consul (now Consul-General) Lincoln, under date of October 1, 1897, gives the following table of freight rates:

Rates of freight.

Port of departure.	Destination.	Cargo.	Scale.	High- est rate.	Low- est rate.	Rate Dec. 31, 1896.	1895.
				<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
San Francisco.....	United Kingdom and Continent.	Wheat.	Per 40 c. f.....	30 0	26 0		
San Francisco, sail- ing vessels.	do	do	do	31 3	18 9	16 3	27 6
New Orleans.....	Liverpool or Con- tinent.	Cotton.	Per ton, net, reg- ular f. c. s.	52 6	33 0	35 0	32 6
Galveston.....	do	do	do	55 0	30 0	35 0	35 0
Charleston.....	do	do	do	46 0	30 0	32 6	
Savannah.....	do	do	do	45 0	29 0	30 0	
New Orleans.....	United Kingdom or Continent.	Grain.	Per ton wheat, net.	18 0			
New York.....	do	do	Per quarter, 480 wheat and corn.	4 9	2 6	3 3	
Baltimore.....							
Philadelphia.....							
Newport News.....							
Norfolk.....							
Pensacola.....	do	Boards.	Per standard ...	110 0	92 6	$\left. \begin{matrix} 100 0 \\ \text{to} \\ 108 0 \end{matrix} \right\}$	100 0

RAILWAYS OF BELGIUM.

There are at present thirteen private companies owning and operating lines in Belgium. Of the lines operated by the State, 918½ miles were built by the State and 898 miles have been purchased of private companies; 201 miles belonging to private companies are operated by the State on a rental or on a division of receipts, while 27 miles of road, the property of private companies, is passed over by trains of the State railways. Of the 2,044 total miles operated by the State, 1,219 miles are single track and 825 miles double track.

Relatively to its size, Belgium has more railroads than any other country of the world; its area is 11,373 square miles. With a total of 2,965 miles of railroad,¹ there are 26 miles of road for every 100 square miles. The country most nearly approaching this proportion is Great Britain and Ireland, where there are 16.778 miles of railway for every 100 square miles. The number of miles of railway per 10,000 inhabitants in Belgium is 4.73, which, however, is exceeded by Germany, with 5.45 miles, and by France, with 6.26 miles. For comparison with our own country, it may be stated that there are in the United States 4.913

¹I regret that there seems to be an error in my report published in Special Consular Reports, Vol. XII, p. 16, entitled "Highways of Commerce," so far as regards the figures relative to Belgium railways. The only explanation must be in the misstatement by my authority of the facts therein given. The statistics mentioned in this present report are drawn directly from the report of the Belgian minister of railways, posts, and telegraphs for 1894.

miles of railway for every 100 square miles and 25.12 miles per 10,000 inhabitants.

HENRY C. MORRIS,
Consul.

Ghent, April 10, 1896.

RAILROAD CHARGES FOR BAGGAGE.

Consul Roosevelt writes from Brussels September 23, 1898:

The rate of railroad freight charges for baggage is 6 centimes (1.1 cents) per 100 kilograms (220 pounds) per kilometer (0.62136 mile).

A third-class ticket is required for a dog, whether he is put into the baggage car or admitted in passenger cars. Dogs in cages or baskets are accepted on the same conditions or pay the same rate as merchandise or baggage. By the payment of a third-class ticket other small animals in cages, boxes, baskets, etc., of which the exterior dimensions are not more than 55 centimeters (21½ inches) in length, 30 centimeters (12 inches) in width, and 30 centimeters in height, may be allowed in passenger's care if objections are not made by other passengers.

Bicycles and tricycles, not boxed or otherwise packed, accompanying travelers, are accepted as baggage at the following rates: Interior of Belgium—Bicycles with one seat pay 70 centimes, (\$0.135); with two, three, or four seats, 1.40 francs (27 cents). Otherwise bicycles are subjected to the same tariff as other merchandise.

LONDON-BRUSSELS STEAMSHIP LINE.

There is only one steamship line in this consular district. It plies between Brussels and London direct, and is of English nationality, with three ships of 300, 350, and 400 tons burden. The time of passage between Brussels and London is 36 hours. These steamers carry merchandise only, for which there is no regular tariff.

TELEPHONE BETWEEN BERLIN, BRUSSELS, AND PARIS.

Consul Roosevelt, of Brussels, under date of August 17, 1898, reports that work is to be begun on a telephone line between Berlin, Brussels, and Paris. When completed, says the consul, the line will be more than 621 miles long and the most important in Europe.

DENMARK.

DANISH AMERICAN STEAMSHIP SERVICE.

Vice-Consul Blom writes from Copenhagen, January 7, 1898:

A new line of steamers between Copenhagen, New York, and Baltimore has been started here, and the first steamer of the line, the *Venus*, leaves Copenhagen to-day for New York, direct. The name of the steamship line is the "Danish Star Line," of 24 Amaliegade, Copenhagen, and the agents in New York City are Messrs. Furness Withy & Co., Limited. The *Venus* is under the Danish flag. It is not yet decided how many steamers the new company will put on the line.

Under date of March 26, 1898, Mr. Blom continues:

The United Steamship Company, Limited, of Copenhagen, has for a short time had steamers running in the winter season from Copenhagen to New Orleans, and now to Newport News and Norfolk. The company is pleased with the result, and it is intended to place more steamers on the route and to have more frequent departures from both sides. The company's fleet on this route comprises the following steamships:

	Registered tonnage
Kentucky.....	4,700
Arkansas.....	4,700
Louisiana.....	4,600
Alexandria.....	3,500
Nicolai II.....	3,500
Xenia.....	3,500
Total.....	24,500

The steamers have been dispatched quite regularly once a month. The agents are Charles F. Orthwein & Sons, New Orleans, and the United States Shipping Company, Newport News and Norfolk. The most important articles carried from New Orleans to Copenhagen are corn, wheat, cotton-seed cakes, lumber, flour, iron, cotton, machinery, bicycles, agricultural implements, etc. In 1897 the quantity was about 46,000 tons.

The route—Copenhagen to Newport News and Norfolk—was opened in December, 1897. The steamers take freight to Denmark, Norway and Sweden, Finland, Russia, and the Baltic.

The export from Copenhagen to New Orleans, etc., is so far insignificant, but efforts are being made to develop it. Cement, iron, rags, and matches have been exported in small quantities.

On August 19, 1898, the vice-consul adds:

The Thingvalla Steamship Company, Limited, of Copenhagen, running steamers between New York and Copenhagen, will cease to exist on October 1 next, when this line of steamers will pass over to the United Steamship Company, Limited. This arrangement will undoubtedly tend to increase the trade between Denmark and the United States, which has already assumed comparatively large proportions. Two new steamers for the New York route, of 7,000 and 7,400 tons displacement, are being built and are nearing completion. They will be delivered this fall by the British shipbuilders.

FRANCE.

RAILWAYS.

Under date of December 13, 1898, Consul-General Gowdy writes from Paris:

The following table shows the principal railway lines of France, with official figures of receipts from the 1st of January to the 12th of August, 1898:

Name.	Length of system.		Total receipts.	
	Kilos.	Miles.	Francs.	Dollars.
Paris, Lyons et Méditerranée.....	9,014	5,601	249,810,000	48,212,300
Nord.....	3,746	2,331	126,300,000	24,375,000
Ouest.....	5,594	3,475	102,156,000	19,716,100
Orléans.....	6,775	4,209	116,734,000	22,523,600
Est.....	4,836	3,004	97,934,000	18,901,200
Midl.....	3,382	2,101	63,521,000	12,256,500
Etat.....	2,810	1,746	26,305,300	5,076,200

Consul du Bellet, of Rheims, under date of Oct. 14, 1897, sends additional information as follows:

According to Mr. Germain Delebecque, honorary general inspector of the traffic on the French northern line, the total length of all railroads in France is, in round numbers, 40,000 kilometers (24,654 miles), on which run 9,695 locomotives, 25,297 passenger cars, and 252,989 freight cars. The companies carry annually 317,652,121 passengers and sell 402,258,046 francs' (\$77,635,000) worth of tickets. Of every 1,000 passengers, 45 travel in first-class carriages, 123 in second class, and 832 in third class. Of every 1,000 francs of fares, 193 are paid by rich people, 260 by middle-class people, and 547 by folks of the lower class. Finally, the employees of the seven companies numbered at the end of 1894 249,705 persons—224,804 men and 24,901 women.

The Northern (Nord) Company runs the fastest train, 59 miles an hour, between Busigny and St. Quentin; the Southern (Midi) Company obtains a speed of 50 miles per hour from Bordeaux to Langon, the Eastern (Est) Company 49 miles per hour between Rheims and Paris, the Orleans Company 46 miles per hour between Aubrais and Paris, and the Western (Ouest) Company 42 miles per hour between Chartres and Le Mans.

Owing to greater advantages offered to shippers, in time and freight rates, most goods from this consular district to United States ports have been forwarded to Antwerp. However, since the 22d of last March, textiles for the United States can be shipped from Rheims to Havre in forty hours. Furthermore, in compliance with a request sent by the minister of public works to railroad companies, the latter have recently reduced their rates for the transportation of cereals, and the Eastern Railroad Company, which owns nearly all the lines running through this district, has made the following changes in its rates:

For a distance of 300 kilometers (186.41 miles), old tariff, 11.75 francs (\$2.35); new tariff, 11.25 francs (\$2.25), a reduction of 4.2 per cent.

For a distance of 500 kilometers (310.68 miles), old tariff, 15.75 francs (\$3.15); new tariff, 14.25 francs (\$2.85), a reduction of 7.5 per cent.

REDUCTION IN FRENCH FREIGHT CHARGES.

Under date of November 26, 1898, Commercial Agent Atwell, of Roubaix, says that railway companies in France have submitted for ministerial approval certain modifications in the law governing rates of transport, which went into effect October 10, 1898. The following companies took part: The Paris, Lyons and Mediterranean, the Northern, the Eastern, the Paris and Orleans, the Southern, the Western, and the Belt. The proposed modifications have particular reference to the wool and cotton industry, as affecting both the raw material and manufactured goods, and are in the line of reduction, as it is recognized that the freight charges must be less onerous in order to allow the merchants and manufacturers of France to compete with rival countries.

INLAND NAVIGATION.

Consul Hill writes from Amsterdam October 16, 1899:

The canals of France include the Marne and Rhine Canal, the Burgundy Canal, the Canal du Centre, the Rhone and Rhine Canal, and the Canal du Midi. The most important lateral canal is that on the Garonne below Toulouse. Canal construction, however, flourishes mainly in the flat district of the north, between the basins of the Seine, Somme, and Scheldt.

However, a project for making a canal between Marseilles and the Rhone is being discussed, the course being from the northern end of Marseilles Harbor through the mountain chain of Rone, by means of a tunnel $4\frac{1}{2}$ miles long, to Lake Soler. thence, by way of Berre and Martigues, to a junction with the existing Canal Martigues, the course of which would be followed as far as Port de Bouc, where a short connecting waterway would open into the Arles Canal, not far from the Rhone.

Consul du Bellet, in his report above referred to, says further:

The total length of the water courses forming the principal lines of the inland navigation was, in 1896, 6,009 kilometers (3,756 miles); of those belonging to the secondary lines, 6,355 kilometers (3,971 miles); total, 12,364 kilometers (7,727 miles).

The tax on navigation was suppressed in 1880, whence dates the development of inland navigation. In 1884 the tonnage exceeded 2,410,000 American tons, and in 1896 it reached 4,184,000 tons.

The above freight is carried by:

	Number.	Gauge.	
		Metric tons.	American tons.
Ordinary boats.....	15,793	3,442,000	3,387,500
Steamers.....	98	22,196	21,500
Total.....	15,891	3,464,196	3,409,000

Consul Brittain writes from Nantes, November 14, 1898:

There is a regular steamship service between the ports of the Loire River and Bordeaux, St. Malo, Havre, Glasgow, Dublin, Belle Isle, Brest, Lorient, and ports of Spain and the Mediterranean. The Compagnie Générale Transatlantique has a regular passenger and cargo service between St. Nazaire and the ports of Cuba, Mexico, Central and South America. A new entrance is being made from the harbor to the bay, or rather the Atlantic Ocean. When completed, vessels of heavy draft may enter at all seasons. The harbor will be the finest on the coast of France. Naval vessels may enter the present harbor, which is cut from the mouth of the Loire River, but owing to the tide, they are often obliged to wait some hours. Extensive shipyards are located at St. Nazaire, where vessels of all kinds are constructed, including war ships for the French navy. The Compagnie Générale Transatlantique is now building three large passenger steamers for the service between Havre and New York. The city of St. Nazaire, located at the mouth of the Loire River, is about 30 miles from Nantes. Prior to 1892, only vessels of comparatively light draft could pass up the river as far as Nantes, in consequence of the shifting sand in the bed of the stream. In that year a maritime canal was completed, which cuts off a bend in the river and avoids the most difficult place. The canal is something over 4 miles in length, and was constructed at a cost of over 26,000,000 francs (\$5,018,000). Eight hundred and twenty-seven vessels passed through the canal in 1897, which was an increase of 50 per cent over the tonnage of the first season after its completion. Vessels of 3,500 may now come up as far as Nantes. The matter of deepening the channel of the river as far as Orleans is being agitated in a spirited manner. Several conventions with that object in view have recently been held in Nantes and at other points along the river.

NEW RAILROAD AND CABLE LINES.

Work upon the railroad which is being constructed to connect the cities of Havre and Dieppe is being actively pushed. According to the authorities, the line will be in complete running order by July 1, 1900. It will be operated by Western Railroad (Chemin der Fer de l'Ouest), the company which controls all the railroad lines from Havre into the interior.

The new French cable between Cape Cod, Massachusetts, and Brest, France, was successfully finished August 16 last. It is owned by the Compagnie Française des Cables Telegraphiques, the proprietors of the old French cable. The cable, which is 3,165 miles long, was constructed by La Société Industrielle des Telephones, under the supervision of French Government engineers.

A. M. THACKARA,
Consul.

HAVRE, *October 28, 1898.*

COMMUNICATION WITH MARSEILLES.

Consul Skinner, of Marseilles, on July 15, 1899, says:

The only railway company operating in Marseilles is the Paris, Lyons and Mediterranean.

The only considerable inland navigation company in the city is the Compagnie Générale de Navigation, 10 Quai de la Tourette. This company does an extensive business between Marseilles and the various cities on the Rhone, and extends its operations via canal as far as Havre.

STEAMSHIP LINES.

In reports dated April 9, 1898, and July 15, 1899, the consul adds:

There is only one regular line (French) from this port to New York. The Cyprien Fabre Company maintains a biweekly service. The Prince Line (English) runs irregularly to New Orleans and the Anchor Line (English) to New York. The latter company is considering a regular service from Marseilles to American ports. The usual voyage by the Fabre Line is twenty-one days via Naples; it is seventeen days direct by the Anchor. Considerable merchandise from this port goes to Genoa or Liverpool, and is there transhipped to the United States.

The French regular steamship lines attached to the port of Marseilles are as follows:

- Compagnie des Messageries Maritimes.
- Compagnie Générale Transatlantique.
- Compagnie Marseillaise de Navigation à Vapeur.
- Société Générale des Transports Maritimes à Vapeur.
- Compagnie de Navigation Mixte.
- Compagnie Française de Navigation à Vapeur.
- Compagnie de Navigation Marocaine et Armenienne.
- Compagnie Nationale de Navigation.
- Compagnie E. Caillol et S. Saintpierre.
- Compagnie E. & M. Castaldi.

Axel Busck & Co.

E. Frisch et Cie.

Compagnie Française de l'Afrique Occidentale.

Amb. Artaud.

A list of foreign companies having regular sailings from this port is annexed:

Name of company.	Lines or ports of call.
Compagnie Générale des Bateaux à Vapeur à Hélice du Nord (Chanal, agent).	Marseilles, Bordeaux, Dunkerque.
Société Navale de l'Ouest (Gondrand frères, agents.)	Marseilles, La Rochelle, and Dunkerque. Havre-Antwerp, Lisbon, Barcelona. Port Vendre-St. Louis du Rhone.
Compagnie Havraise Péninsulaire (Caillol et Saintpierre, agents).	Havre, northern and Pacific ports. Diego Suarez, Tamatave, Mauritius.
Peninsular and Oriental Company (M.M. Estrine et Cie., agents).	Alicante, Valencia, Palma (Balearic Islands). India, China, and Japan.
Compagnie Florio-Rubattino (agents, Gondrand frères).	Australia. Sardinia, Sicily, Alexandria, and Tunis.
Compagnie Sevillane (A. & L. Hains, agents)....	Italy and the East. Barcelona, Valencia, Alicante, Carthagena, Almeria Malaga, Cadiz, Seville.
Compagnie Vinuesa de Seville (Ex Espaliu) (Videl et Cie., agents).	Barcelona, Valencia, Malaga, Cadiz, and Seville
Compagnie Transatlantique de Barcelone (Vidal et Cie., agents).	Barcelona, the Antilles, Mexico, Venezuela, Colombia Barcelona, Montevideo, and Buenos Ayres.
Compagnie Valenciana (J. B. et A. Artaud frères, agents).	Barcelona, Dakar, Gold Coast, Monrovia, Fernando Po, and Gaboon.
Compagnie Ybarra de Seville (Rodrigues Ely frères, agents).	Barcelona, Valencia, Alicante, Almeria, Aguilas and Malaga.
Compagnie Rotterdam Lloyd (agents, Ruys et Cie., place de la Bourse, 11).	Marseilles to Bilbao, stopping at principal Spanish ports, Dutch Indies.
Johnston Line.....	Constantinople and Odessa.
Bibby Line.....	Rangoon.
Glynn Line.....	Liverpool.
Hall Line.....	Kurrachee.
(Watson & Parker, agents).	
The Persian Gulf Steamship Company (Savon frères, agents).	Regular service between London and Marseilles-Port Said, Bunder Abbas and Bushire, Basorah Bagdad, etc., and vice versa.
Compagnie Puglia (Gondrand frères, agents)....	Genoa, Leghorn, Naples, Messina, Catania, Brindisi, Bari, Barieta, Venice.
Compagnie Hambourgeoise (Frisch, agents).....	Hamburg.
Anchor Line (John G. Todd, agent).....	Bombay-Marseilles. Marseilles-Liverpool-Glasgow. Marseilles-New York. New York-Marseilles.
Adria, Compagnie Royale Hongroise de Navigation Maritime à Vapeur (Philippe Perrella, agent).	Service between Fiume, Trieste, Marseilles, and vice versa. Points touched: Fiume, Trieste, Bari, Catania, Riposto, Messina, Palermo, Naples, Leghorn, Genoa, Port Maurice, Nice, and Marseilles.
Orient Line (Worms & Co., agents).....	Naples, Port Said, Suez, Colombo, Albany, Adelaide, Melbourne, and Sydney.
Nippon Yusen Kaisha (Japanese) (John G. Todd, agent).	London and Antwerp (semimonthly service).

Cost of discharging, 50 centimes (9.6 cents) per ton on grain, seeds, and general cargo in bulk or in bags; coal, 1.25 francs (24 cents) per ton.

STEAMSHIP FREIGHT RATES.

Under date of December 20, 1898, Consul Skinner sends a table of freight rates prevailing between Marseilles and various points, as follows:

Freight rates from Marseilles, France.

[Cubic meter = 35.3166 cubic feet; 1,000 kilograms = 2,204.6 pounds.]

To—	Ma- chin- ery. <i>a</i>	Fur- ni- ture. <i>a</i>	Mer- chant iron. <i>b</i>	Hard- ware. <i>b</i>	Bicy- cles. <i>a</i>	Glass- ware. <i>a</i>	Boots and shoes. <i>a</i>	Iron pipe. <i>a</i>	Agent or company reporting.
Colombo	\$5.79	\$5.79	\$3.47	\$3.47	\$5.79	\$5.79	\$5.79	\$5.79	Geo. Budd.
Rangoon	8.69	8.69	8.69	8.69	8.69	8.69	8.69	8.69	Do.
Batavia	10.62	10.62	7.72	7.72	10.62	10.62	10.62	10.62	Do.
Tientsin	14.48	14.48	16.41	<i>a</i> 14.48	14.48	14.48	14.48	<i>b</i> 16.41	Messageries Maritime Co.
Perth, W. Australia	15.05	15.05	16.98	<i>a</i> 15.05	15.05	15.05	15.05	<i>b</i> 16.98	Do.
Sydney	11.58	11.58	9.65	9.65	11.58	11.58	11.58	11.58	Geo. Budd.
Wellington	15.44	15.44	17.37	<i>a</i> 15.44	15.44	15.44	15.44	15.44	Messageries Maritime Co.
Montevideo	(<i>c</i>)	4.83	6.76	<i>a</i> 4.83	4.83	4.83	4.83	<i>b</i> 6.76	Cyprien Fabre Co.
Aden	3.86	3.86	3.47	3.47	3.86	3.86	3.86	3.86	Geo. Budd.
Madras	7.72	7.72	6.76	6.76	7.72	7.72	7.72	7.72	Estrine & Co.
Bangkok	11.58	11.58	13.51	<i>a</i> 11.58	11.58	11.58	11.58	11.58	Messageries Maritime Co.
Sourabaya	10.62	10.62	7.72	7.72	10.62	10.62	10.62	10.62	Geo. Budd.
Hongkong	11.58	9.65	8.44	8.44	9.65	<i>b</i> 9.02	<i>b</i> 8.44	<i>b</i> 8.44	Messageries Maritime Co.
Higo	11.58	9.65	8.44	8.44	9.65	8.92	<i>b</i> 8.44	<i>b</i> 8.44	Do.
Melbourne	9.65	12.06	9.65	9.65	12.06	10.86	<i>b</i> 9.70	<i>b</i> 9.65	Do.
Brisbane	11.58	11.58	9.65	9.65	11.58	11.58	11.58	11.58	Geo. Budd.
Auckland	15.44	15.44	<i>a</i> 15.44	<i>a</i> 15.44	15.44	15.44	15.44	15.44	Messageries Maritime Co.
Rosario	(<i>c</i>)	6.76	<i>a</i> 8.69	<i>a</i> 6.76	6.76	6.76	6.76	<i>b</i> 8.69	Cyprien Fabre Co.
Bombay	6.76	6.76	5.79	9.79	6.76	6.76	6.76	6.76	Geo. Budd.
Calcutta	7.72	7.72	4.83	4.83	7.72	7.72	7.72	7.72	Do.
Singapore	10.62	10.62	7.72	7.72	10.62	10.62	10.62	10.62	Do.
Shanghai	11.58	9.65	8.44	8.44	9.65	<i>b</i> 8.92	<i>b</i> 8.44	<i>b</i> 8.44	Messageries Maritime Co.
Yokohama	11.58	9.65	8.44	8.44	9.65	8.92	8.44	<i>b</i> 8.44	Do.
Adelaide	11.58	11.58	9.65	9.65	11.58	11.58	11.58	11.58	Estrine & Co.
Hobart	15.44	15.44	<i>a</i> 15.44	<i>a</i> 15.44	15.44	15.44	15.44	15.44	Messageries Maritime Co.
Saigon	5.79	5.79	5.79	5.79	5.79	5.79	5.79	5.79	Compagnie Nationale de Navigation.
Haiphong	7.72	7.72	6.76	7.72	7.72	7.72	7.72	6.76	Do.
Buenos Ayres	(<i>c</i>)	4.83	6.76	4.83	4.83	4.83	4.83	6.76	Cyprien Fabre Co.

a Per 35.3166 cubic feet.

b Per 2,204.6 pounds.

c According to size.

TRANSPORTATION FACILITIES AT NICE.

Consul Van Buren writes from Nice, under date of October 22, 1898:

Transportation facilities by sea have received a valuable adjunct in the establishment of a regular line of steamers of the Austrian Adria Line, which connects with the splendid service of German steamers plying between New York and Genoa. The importance of this line for the port of Nice, especially in case goods require to be delivered promptly, can not be exaggerated.

GERMANY.

RAILWAYS.

In eleven years (1885-1895) the Empire has seen its railways increase from 36,538 kilometers (22,704 miles) to 44,167 kilometers (27,445 miles). There were in 1895 15,219 kilometers (9,457 miles) of double-track lines and 28,948 kilometers (17,988 miles) of single-track lines, a ratio of 1.9 to 1 in favor of the single-track lines. In 1885 the ratio was 2.4 to 1. There are 107 kilometers (66 miles) with three tracks and 66 kilometers (41 miles) with four tracks.

The following table shows how each State of the Empire is provided with railways:

State.	To each 100 square kilometers of territory.		To each 10,000 inhabitants.	
	1885.	1895.	1885.	1895.
	<i>Kilometers.</i>	<i>Kilometers.</i>	<i>Kilometers.</i>	<i>Kilometers.</i>
Prussia	6.24	7.61	7.84	8.49
Bavaria	6.62	7.81	9.28	10.12
Saxony	13.83	15.24	6.67	6.1
Württemberg	7.39	7.95	7.29	7.5
Baden	8.81	10.34	8.44	9.2
Hesse	10.9	12.04	8.71	9.53
Mecklenburg-Schwerin	3.98	7.71	9.36	17.57
Saxe-Weimar	7.77	9.73	8.85	10.44
Mecklenburg-Strelitz	5.41	8.07	15.84	24.09
Oldenburg	5.15	6.85	9.58	12.17
Brunswick	9.33	12.48	9.4	10.7
Saxe-Meiningen	6.58	8.48	7.62	9.1
Saxe-Altenburg	10.52	13.02	8.68	9.66
Saxe-Coburg-Gotha	8.78	13.17	8.64	12.06
Anhalt	10.17	12.5	9.6	9.94
Schwarzburg-Sondershausen	8.74	10.71	10.38	11.41
Schwarzburg-Rudolstadt	2.49	4.44	2.9	4.72
Waldeck .....	.89	3.21	1.79	6.2
Reuss (older line)	11.17	11.17	6.56	5.2
Reuss (newer line)	5.82	9.54	4.34	6.16
Schaumburg-Lippe	7.16	7.15	6.7	6
Lippe	2.4	2.41	2.34	2.2
Lubeck	15.75	15.75	6.49	6.71
Bremen	17.56	18.84	2.69	2.53
Hamburg	9.31	9.9	7	6
Alsace and Lorraine	8.96	10.1	8.43	9.04

The stations of all the German railroads are models of neatness, architectural form, and practicability. In 1885 there were 6,025 stopping places, and in 1895, 8,235, an increase in ten years of 37 per cent. There is a station to every 5.36 kilometers (3.33 miles). Dresden is building a new and expensive depot. The stations at Frankfort and Cologne are among the finest in the world.

The public reap a great deal of benefit here from the State ownership railroads. Besides giving excellent service, they compel such service from the private lines, for even these are under governmental supervision and control. The passenger rates are reasonable, transportation of freight and packages being much cheaper than with us. Passenger rates run from 8 pfennigs (1.904 cents) for first class, 6 pfennigs (1.428 cents) for second class, 4 pfennigs (0.952 cent) for third class, and 2 pfennigs (0.476 cent) for fourth class per kilometer (0.621376 mile).

These rates are for accommodation trains. For fast trains the rates are, for first class, 9 pfennigs (2.142 cents); second class, 6.67 pfennigs (1.587 cents); third class, 4.67 pfennigs (1.11 cents) per kilometer, with 25 pounds free baggage, besides luggage carried in the passenger car. Then there are return tickets, costing, for second class, per kilometer, round trip, 8 pfennigs (1.9 cents); third class, 5 pfennigs (1.19 cents). It may be remarked here that very few people ride first class, especially on the accommodation trains.

Besides these, there are annual tickets, commutation cards, school tickets, etc., at greatly reduced rates. The rates for scholars are so cheap that they seem almost outside the range of belief. They pay for one ticket, for any period less than twelve months, second class, 2 marks (47.6 cents); third class, 1.66 marks (38.84 cents); for a full year, second class, 1.50 marks (35.7 cents); third class, 1 mark (23.8 cents). Besides, there are combination round-trip tickets by which one is able not only to go all over the Empire at most reasonably reduced rates, but to make trips into Italy and other countries on combination tickets similar to those issued by continental tourist agents.

J. C. MONAGHAN,

Consul.

CHEMNITZ, *March 21, 1895.*

RAILWAYS OF SAXONY.

Under date of October 14, 1898, Consul Monaghan, of Chemnitz, says:

No kingdom on earth, not even England, is better provided with railroads. A complete network spreads itself from Leipzig, Dresden, and Chemnitz, the great centers, to the remotest villages along the Bohemian, Prussian, and Silesian frontiers. There are upward of 2,800 kilometers (1,700 miles) of railroad in the Kingdom, or 18 kilometers to every 100 square kilometers, double the Empire's average. The condition of the highways is excellent; in fact, Saxony is famous for its fine roads. It is regarded as the paradise of cyclists. There are 3,700 kilometers (2,300 miles) of roads. The waterways that serve commerce are remarkable. The Elbe has been made navigable far beyond the Kingdom's borders on both sides. Ships ply as far up as Prague and as far down as Hamburg. The tonnage is 150,000. Most of the transportation is done in barges, drawn by tugs that run on a pick-up chain.

PROJECTED CANALS.

ELBE-DANUBE.

Under date of Dresden, November 11, 1897, Consul-General Cole writes:

The German Government at all times extends encouragement to the improvement of waterways and building canals, with a view of cheapening the cost of transportation.

The most important canal now projected will unite the river Elbe with the Danube at the Saxon boundary, opening a direct waterway into Bohemia and the Austrian Empire. Freight rates between Dresden and the seaboard are not excessive, but vary from competition, stage of water in the river, etc., and seem to be somewhat

higher during the fall months of each year. The distance from Dresden to Hamburg by steamer on the Elbe is 360 miles, and the time occupied in making the trip two to three days. The average rate on dry goods and similar valuable property is 5 cents per 212 pounds, and upon iron, common glass, or coarse, heavy freight the rates are from 9 to 11 cents per 212 pounds. Rail rates are considerably higher, but there is not much traffic sent all rail during the season of navigation, which usually occupies nine months of each year.

RHINE-ELBE.

Consul Hill writes from Amsterdam, October 16, 1899:

The Rhine-Elbe canal project seems at this time to be a very important topic of German discussion. The Rhine, Ems, Weser, Elbe, Oder, and Vistula flow north and south (approximately), so that artificial waterways from east to west, connecting these great rivers, have naturally suggested themselves. In 1863, the Prussian Government ordered a preliminary survey of a canal to join the Elbe and the Rhine, but the succeeding wars prevented action. In 1882 a plan was drawn up by the engineers Michaelis and Hess, but the bill presented by the Government in 1883 to carry it out failed to pass the upper house. In 1886, when the bill providing for the building of the canal between the Oder and the Spree was introduced, the Government pressed the Rhine-Elbe project to the fore, and both houses agreed to the construction of a canal joining Dortmund and the river Ems. This canal was begun in 1892, and was opened to navigation on August 10, 1899. It starts from the seaport of Embden, on the North Sea, and, making use of the channel of the river Ems for a part of its length, ends, for the present, at the village of Herne, in Westphalia, a distance from the Rhine of 27½ miles. It is 160 miles long and cost \$18,325,319.

After the adoption of this scheme, five other projects for the extension of this canal to the Rhine were examined by the Government and preference awarded to the South Emscher canal. A bill authorizing the same was defeated in the Prussian Diet in 1898.

The late Government proposals provide, first, for the construction of a canal through the valley of the Emscher from Herne to Rubrorf, on the Rhine, and of a feeder to supply this canal with water from the Rohr; second, the improvement of the existing canal between Dortmund and the Ems by the construction of locks at Heinrichsburg and Munster; third, the construction of a central canal from the Ems to the Elbe, to consist of a main canal from Beregern to Heinrichsburg, a little below Magdeburg on the Elbe, with two feeders to bring water from the Weser and the Seine, entering the main canal at Dankersen and Buchholz, respectively; and of eight branch canals to connect the main waterway with Osnabruck, Minden, Linden, Wulfel, Hildesheim, Lehrte, Peine, and Magdeburg; and fourth, the means necessary to make the Weser suitable for canal traffic from Bremen to Hameln, some distance above the point where the central canal will cross the river.

It is intended to make the canal navigable for ships up to 750 tons burden. It will have a depth of 2½ meters (8.2 feet) and a width of 30 meters (98.42 feet) at the water line. Very few locks will be required in crossing the North German plain. On an average, there will be only one lock for every 24 miles of waterway, while there will be one clear stretch of over 130 miles and another of nearly 60 miles. It is estimated that the building of the entire canal will cost \$75,691,000, including the cost of widening and deepening the Weser from Hameln to Minden. The cost of the work on the lower part of the river from Minden to Bremen will, it is thought, be borne by the city of Bremen. A condition of the construction of the canal is that the provincial assemblies and other corporations interested shall guarantee the State an annual revenue from the tolls and other sources sufficient to cover the cost of maintaining the waterway, and to provide an interest of 3 per cent on the cost of construction and an annual contribution of one-half per cent toward a sinking fund for

the payment of the debt. These guaranties make an annual sum of \$1,313,820, leaving \$1,411,140 to be guaranteed by the State. The greater part of the first guaranty has already been secured and it is expected that the city of Berlin, which is connected by the Spree with the Elbe, and so with the Rhine-Elbe Canal, will assume responsibility for the amount lacking, which is less than 10 per cent of the whole. A writer in the London Times says that the building of the canal will undoubtedly confer a great benefit upon German commerce and industry. The Rhenish and Westphalian district which it will connect with the center and east of Germany is the most important seat of German industry. Although it embraces but one one-hundred-and-fiftieth of the German Empire, it contains one twenty-second of its population and brings to the German railways a quarter of their whole traffic. In 1894, this district was credited with 44 per cent of the raw iron produced in Germany, while the output of its collieries increased from 37,000,000 tons in 1892 to 48,000,000 tons in 1897, and other industries do not lag behind. For the transportation of these products there is an extensive system of railroads, but according to the statements of the people themselves, their facilities seem inadequate in comparison with the work to be done. With the construction of a canal a fall in rates would be inevitable, and the manufacturers in the west would be enabled to place their products on the eastern and central markets at greatly reduced prices. Hence the opposition of those who see that the industries of Silesia and other eastern provinces will have to meet with stronger competition, and of the agrarians, who fear that cheapening means of transportation will result in their being undersold at home by foreign agricultural products.

BERLIN-STETTIN.

Under date of September 8, 1898, Consul Kehl, of Stettin, says:

The proposed canal connecting this port with Berlin (in the same way as Hamburg) is assuming a tangible form. Surveys have been made, but as yet it has not been decided whether to approach Berlin on the east or west side. Stettin favors the western approach as the shortest and cheapest route. It is estimated that three years will be necessary to complete this canal, and the cost will be 30,000,000 marks (\$7,140,000).

LEIPZIG-RIESA.

Consul Warner, of Leipzig, August 31, 1899, says:

About two years ago the city of Leipzig selected two commissioners to prepare plans for a canal between Riesa and Leipzig, navigable for large vessels, and granted the sum of 10,000 marks (\$2,380) to defray the expenses incurred in connection therewith. The plans are now ready. The canal will be nearly 42 miles in length. It is estimated that the cost of building it will be higher than that of other canals of about the same length. This is principally on account of the difficulty which will be encountered in getting over the watershed. The cost of the ground, ground and slope work, road and railway crossings, lifting work, water feeding, etc., will amount to 38,000,000 marks (\$9,044,000). The cost of the harbor in Leipzig will amount to 9,000,000 marks (\$2,142,000) alone, and to connect the canal with the Pleisse another 3,500,000 marks (\$831,000) will be necessary.

KAISER WILHELM CANAL TRAFFIC.

Traffic through the Kaiser Wilhelm Canal from the opening, July 1, 1895, to March 1, 1898.

[Compiled from German official returns by the Treasury Bureau of Statistics.]

NUMBER AND TONNAGE OF VESSELS PASSING THROUGH THE CANAL.

	July 1, 1895, to June 30, 1896 (first year after opening).		Year ending Mar. 31—			
	Vessels.	Tons.	1897.		1898.	
			Vessels.	Tons.	Vessels.	Tons.
Steam:						
With cargoes.....	5,799	984,868	5,786	1,178,164	7,028	1,652,497
In ballast.....	1,732	155,710	2,501	229,271	2,368	275,049
Total	7,531	1,140,578	8,287	1,407,435	9,396	1,927,546
Sailing:						
With cargoes.....	6,184	260,726	7,458	303,955	8,928	371,771
In ballast.....	3,119	104,679	4,215	137,069	4,784	170,070
Total	9,303	365,405	11,673	441,023	13,712	541,841
Aggregate	16,834	1,505,983	19,960	1,848,458	23,108	2,469,387

Not including war vessels and vessels of the canal administration.

NATIONALITY AND NUMBER OF VESSELS WHICH PASSED THROUGH THE CANAL

	July 1, 1895, to June 30, 1896 (first year after opening).		Year ending March 31—			
	Vessels.	Tons.	1897.		1898.	
			Vessels.	Tons.	Vessels.	Tons.
Steam:						
German.....	6,480	730,172	7,049	904,341	7,781	1,295,460
Belgian.....	3	1,385	3	1,946	25	14,539
British.....	164	106,003	202	143,079	294	194,800
Danish.....	547	158,829	586	171,979	593	165,345
French.....	6	2,822	12	8,576	8	4,111
Dutch.....	63	33,128	38	9,888	41	13,729
Swedish and Norwegian.....	204	65,145	325	123,051	554	173,116
Russian.....	56	37,401	55	89,448	83	51,782
Other.....	8	5,943	17	5,127	17	13,654
Sailing:						
German.....	8,477	295,226	10,813	356,427	12,526	416,080
Belgian.....			3	60		
British.....	20	1,993	17	2,274	50	4,743
Danish.....	265	14,492	242	15,003	274	16,879
French.....	2	110	1	225	3	74
Dutch.....	318	25,362	337	29,102	445	41,175
Swedish and Norwegian.....	102	22,261	215	28,113	352	47,807
Russian.....	28	5,906	44	9,443	54	11,020
Other.....	1	50	1	367	8	4,490
Total:						
German.....	14,957	1,025,398	17,862	1,260,768	20,307	1,711,549
Belgian.....	3	1,135	6	2,015	25	14,539
British.....	184	106,001	219	145,353	344	194,800
Danish.....	812	173,321	828	186,982	867	182,222
French.....	8	2,932	13	8,801	11	4,155
Dutch.....	381	58,490	375	38,990	486	56,877
Swedish and Norwegian.....	396	87,406	540	151,164	906	220,493
Russian.....	84	43,307	99	48,891	137	62,810
Other.....	9	5,993	18	5,494	25	17,544

Traffic through the Kaiser Wilhelm Canal from the opening, July 1, 1895, to March 31, 1898—Continued.

PER CENT OF TOTAL SHIPPING.

	1897.		1898.	
	Vessels.	Tons.	Vessels.	Tons.
German.....	80.49	68.21	87.88	69.30
Belgian.....	.03	.11	.11	.59
British.....	1.10	7.86	1.49	8.08
Danish.....	4.15	10.11	3.75	7.28
French.....	.06	.48	.05	.17
Dutch.....	1.88	2.11	2.10	2.30
Swedish and Norwegian.....	2.70	8.18	3.91	9.93
Russian.....	.50	2.64	.59	2.54
Other.....	.09	.30	.11	.71

Number of war vessels passing through the canal July 1, 1895, to June 30, 1896.....	266
Number of war vessels passing through the canal fiscal year ending March 31—	
1897.....	327
1898.....	422

Revenue derived from the Kaiser Wilhelm Canal service.

Year.	Tonnage duties.	Towing services.	Other revenues.	Total.
July 1, 1895, to June 30, 1896.....	\$160,590	\$507	\$940	\$162,037
Year ending March 31—				
1897.....	175,161	374	1,409	176,944
1898.....	226,766	184	1,289	228,239

OCEAN FREIGHTS.

Under date of Freiburg, October 14, 1897, Commercial Agent Thierot writes as follows:

FREIGHT FROM BREMEN TO NEW YORK AND BALTIMORE.

Class I.—Accordions, Bohemian glassware, earthenware, raw wool, toys, and similar goods, \$2 per cubic meter (35.3 cubic feet).

Class II.—Albums, bed feathers, beer, brandy, colonial and preserved goods, ironware, colors, hides (not prepared), fruits, wooden ware, packing paper, seeds, wax, wool (of Berlin), \$3 per cubic meter (35.3 cubic feet).

Class III.—Aniline colors, cottons, artificial flowers, books (prints), chocolate, cigars, crystal ware, drugs, albumen, fine ironware, fancy feathers, hides (prepared), fine glassware, gum, buttons, leather, liquors, metal ware, furniture, writing paper, plants, chinaware, hams, hosiery, wines, woolen goods, sugar confectionery, \$5 per cubic meter (35.3 cubic feet).

Class IV.—Ethereal oils, chemicals, champagne, ivory, curtains, gloves, halfsilks, indigo, surgical and other instruments, furs, velvets, laces, carpets, clothes, arms, \$7.50 per cubic meter (35.3 cubic feet).

Class V.—Ready-made clothes (of Berlin), pictures, leather gloves, fancy articles, silk goods, newspapers and periodicals, \$10 per cubic meter (35.3 cubic feet).

FREIGHT FROM HAMBURG.

To New York, per cubic meter (35.3 cubic feet):

Class I—	
Mail steamship	\$2.50
Union steamship.....	2.00
Class II—	
Mail steamship	3.50
Union steamship.....	3.00
Class III.....	5.00
Class IV.....	7.50
Class V.....	10.00

To Philadelphia and Baltimore, per cubic meter (35.3 cubic feet):

Class I.....	\$2.00
Class II.....	3.00
Class III.....	5.00
Class IV.....	7.50
Class V.....	10.00

To Boston, per 40 cubic feet (English):

	s.	d.
Class I.....	10	0= \$2.43
Class II.....	12	6= 3.04
Class III.....	15	0= 3.65
Class IV.....	20	0= 4.87
Class V.....	25	0= 6.08

The classification of goods is approximately the same as for the freight rates from Bremen.

To New Orleans.—Class I.—Arms, beddings, books, boots, buttons, carpets, clothings, cottons, cutlery, feathers, furniture, glassware, gloves, hosiery, instruments, leather ware, linens, mercery, millinery, oils, paper, porcelain, silks, threads, woolens, yarns, and similar goods, 20s. (\$4.87) per 40 cubic feet (English).

Class II.—Agricultural implements, bags, beans, beer, brushes, chains, earthenware, groceries, hardware, ironware, lead, nails, paper in bales, preserved provisions, rice, seeds, soap, spirits, steel, sulphur, tin, tools, toys, wax, wines, zinc, and similar articles, 12s. 6d. (\$3.04) per cubic feet (English).

FREIGHTS FROM HAVRE TO NEW YORK.

Arms, Paris articles, millinery, cutlery, instruments, nouveautés, articles of art. perfumery, carpets, and velvets, 30 francs (\$5.79) per cubic meter (35.3 cubic feet); plus 10 per cent. Chocolate, gloves, ribbons, and silks, 30 francs (\$5.79) per cubic meter; toys, woolens, cottons, and mixed textures, 25 francs (\$4.82) per cubic meter; plus 10 per cent. Buttons, colors, leather, drugs in bales, earthenware, machinery, furniture, paper, clocks, porcelain, glassware, and goods in bond, 25 francs (\$4.82) per cubic meter; preserved goods, mineral waters, cheese, fruit, oils in cases, and packing paper, 20 francs (\$3.86) per cubic meter; flowers, feathers, and straw hats, 18 francs (\$3.47) per cubic meter; bottles in bags, raw wool, porcelain in casks, glass and earthenware in casks, 15 francs (\$2.90) per cubic meter; carbonate of potassium and soda, chlorate of potassium and soda, grains, beans, oil in casks, tartar in casks, 25 francs (\$4.82) per 1,000 kilograms (2,204 pounds); preserved fish, cement in barrels, lead, and ocher in casks, 20 francs (\$3.86) per 1,000 kilograms.

FREIGHTS FROM ROTTERDAM AND ANTWERP.

Rates from Rotterdam vary from \$3 to \$5 per cubic meter (35.3 cubic feet), according to the nature of the goods.

Rates from Antwerp vary according to offer and demand, and almost every article is quoted at a different rate.

CABLE TAXES (PER WORD) TO THE UNITED STATES AND BRITISH AMERICA.

To New York City, Brooklyn, Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, New Brunswick, Newfoundland, Ontario, and Quebec, 1.05 marks (25 cents); to the District of Columbia, Delaware, Maryland, New Jersey, State of New York, and Pennsylvania, 1.20 marks (29 cents); to Alabama, the Carolinas, Pensacola, Georgia, Illinois, Indiana, Kentucky, New Orleans, Minneapolis, Duluth, St. Paul, Mississippi, St. Louis (Mo.), Ohio, Tennessee, Virginia, Wisconsin, 1.30 marks (31 cents); to Arkansas, Colorado, the Dakotas, Florida (Pensacola excepted), Indian Territory, Iowa, Kansas, Louisiana (New Orleans excepted), Missouri (St. Louis excepted), Montana, Nebraska, New Mexico, Texas, and Wyoming, 1.50 marks (36 cents); to Arizona, California, Idaho, Manitoba, Nevada, Oregon, Utah, and Washington Territory, 1.60 marks (38 cents); to Key West (Fla.), 1.75 marks (42 cents); to British Columbia, Northwest Territories, and Vancouver Island, 1.60 marks (38 cents).

TIME OF COMMUNICATION WITH THE UNITED STATES.

Letters from this consular district forwarded via Bremen, Hamburg, Havre, or England, according to the date of sailing of mail steamers, generally reach New York within ten days, other seaports and interior places of the United States within eleven to sixteen days. Goods shipped from here to the seaports Bremen, Hamburg, Antwerp, Rotterdam, or Havre, by rail, take from five to eight days; if forwarded to Antwerp or Rotterdam by transport vessel on the Rhine, from ten to twelve days. The passage from these European seaports to the United States requires from eight to sixteen days, varying according to the places of sailing and destination.

As a rule, exporters on this side of the Rhine, in Baden, forward their goods for the United States via Bremen, Hamburg, Antwerp, or Rotterdam; exporters on the other side of the Rhine, in Alsace, via Havre.

INTERNAL FREIGHT RATES.

Freight rates from this consular district to the nearest European seaports are as follows:

[Per 100 kilograms=220 pounds.]

To Bremen:	
Per slow freight, by rail.....	marks.. 7.34=\$1.75
Declared as goods for export.....	do.... 5.14= 1.22
To Hamburg:	
Per slow freight, by rail.....	do.... 7.94= 1.89
Declared as goods for export.....	do.... 5.49= 1.13
Per collection (load).....	do.... 4.00= .95
To Antwerp:	
Per slow freight, by rail.....	do.... 6.80= 1.31
Declared as goods for export.....	do.... 5.87= 1.13
By water on the river Rhine.....	do.... 4.00= .95
To Rotterdam:	
Per slow freight, by rail.....	do.... 5.70= 1.36
By water on the river Rhine.....	do.... 4.00= .95
To Havre:	
Per slow freight, by rail.....	francs.. 6.21= 1.20
Machinery.....	do.... 4.90= .95
Per collection (load).....	do.... 4.27= .82
Machinery.....	do.... 3.47= .67

TRANSPORTATION FACILITIES OF THE RHINE VALLEY.

Mannheim, situated in the Rhine valley, is one of the most important commercial centers in southern Germany, and it is deemed fitting to present to the attention of American exporters information respecting the transportation facilities between the seacoast and this city, as well as other inland points.

Railway communication with Hamburg, Bremen, Antwerp, and Rotterdam is very good; but for many reasons river transportation is less injurious to various kinds of freight, at the same time giving the shipper rates varying from 25 to 75 per cent less than the railway charges, depending upon the condition of the river and the character and class of goods shipped.

Merchants are in the habit of purchasing from wholesale dealers in one of the larger seacoast cities, and after the railway freight rates have been added to the large commissions demanded from the wholesale houses, such high prices must be asked for the goods when they reach this market that sales are slow, if not impossible. If American exporters will deal directly with the German importer and retail dealer in this jurisdiction the wares can be purchased at first hand so that the retail dealers can dispose of them at prices within the reach of the average purchaser and yet make a handsome profit.

It is for this reason that low transportation charges figure very largely in the estimate of what goods can be sold for so as to compete favorably with the German producer.

The Rhine and its tributaries penetrate regions quite remote from the sea, while many canals ramify the country and connect with foreign waterways. The following table represents the number and kind of vessels engaged in traffic on the Rhine, their carrying capacity, and the number of men employed during the year 1897:

[1 centner = 110.24 pounds.]

Nationality.	Vessels of wood.			Vessels of iron.		
	Number.	Carrying capacity.	Men employed.	Number.	Carrying capacity.	Men employed.
German:		<i>Centners.</i>			<i>Centners.</i>	
Baden	253	568,698	520	243	4,198,046	851
Bavaria	187	317,206	406	15	106,475	47
Aleace-Lorraine	35	71,011	72	5	46,377	16
Hesse	149	303,600	311	132	1,697,987	416
Prussia	335	1,056,770	815	922	13,604,557	3,026
Wurttemberg	7	19,453	16	2	15,642	5
Belgium	644	2,802,820	1,479	380	2,158,844	972
British	40	109,104	127	2	21,920	7
French	12	68,690	36			
Netherlands	2,617	6,591,851	6,527	1,413	10,590,410	3,930
Switzerland				1	3,522	3
All others	10	33,653	27	2	7,542	5

The steamboats carry both passengers and freight, and some of them are used as towboats to pull the large barges above mentioned.

One company alone has in service nine passenger steamers, of 2,000 to 3,000 tons each, which also carry a greater or less quantity of freight. These maintain a daily service between Rotterdam and Mannheim, consuming, on an average, seventy-three hours upstream and but forty-nine on the return trip.

The following is a table of freight rates between Rotterdam and the chief Rhine ports. Two classes of freight are named, the unit being per 100 kilograms (220.46 pounds). Class A includes all ordinary goods not perishable, and Class B includes perishable articles, such as the various fruits, excluding apples and fresh nuts.

Between Rotterdam and—	Class A.			Class B.		
	Miscellaneous parcels etc.	Consignments of 5,000 kilograms (11,023 pounds).	Consignments of 10,000 kilograms (22,046 pounds).	Miscellaneous lots, etc.	Consignments of 5,000 kilograms (11,023 pounds).	Consignments of 10,000 kilograms (22,046 pounds).
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Emmerich	15.4	14	13			
Düsseldorf, Duisburg-Orsoy, Wesel	16.6	15.9	14.9	28.5	25.7	22.8
Cologne	19	18	17.1	28.5	25.7	22.8
Bonn, Neuweid	21	20.4	19.2	35.7	32.1	28.5
Coblenz	23.8	22.6	21	38	34.2	30.4
Bingen, Rüdesheim	23.8	22.6	21	40.4	36.4	32.3
Bieberich, Mainz	23.8	22.6	21	42.8	38.5	34.2
Oppenheim	26	24.9	23.8	47.6	42.8	38
Worms	28.5	27.1	25.7	47.6	42.8	38
Ludwigshafen, Mannheim	28.5	27.1	25.7	47.6	42.8	38

A vast quantity of freight is carried by the fleets of barges, especially when the volume of water in the Rhine is normal. A single schlepper, or towboat, of the larger class, brings up four or five vessels, loaded with from 1,000 to 2,000 tons each, a cargo sufficient to make up twenty or twenty-five freight trains. The average freight car is small and light, and during busy seasons so many trains have to be run that serious delays sometimes occur. This is especially true during the period of the annual military maneuvers.

The following table gives the distances between different points on the Rhine and the corresponding elevations above sea level:

Locality.	Distance.	Altitude.	Locality.	Distance.	Altitude.
	Miles.	Feet.		Miles.	Feet.
Rotterdam		0.75	Mannheim, Ludwigshafen	351.77	294.6
Emmerich	81.17	40.92	Speier	366.78	306.45
Wesel	112.47	56.94	Sonderheim	379.30	319.53
Düsseldorf	155.72	95.64	Neuburg	395.95	345.15
Cologne	190.14	120.36	Plittersdorf	404.9	
Bonn	210.65	151.2	Wanzanau	427.95	426.88
Linz	225.81	167.81	Strassburg	433.3	446.74
Andernach	233.95	178.62	Gertsheim	447.22	493.14
Coblenz	249.49	198	Schönau	461.14	552.03
Boppard	262.32	210.90	Alt-Breisach	475.53	719.38
Bacharach	279.17	233.70	Basel	512.34	802.86
Bingen	287.95	256.76	Lauterburg	536.41	967.47
Mainz	306.59	269.55	Kaiserstuhl	554.07	1,095.73
Worms	340.46	272.31	Schaffhausen	576.96	1,273.20

The larger tributaries of the Rhine, on which there is considerable shipping, are the Main, the Mosel, and the Neckar. The following table refers to the cities on the Main:

Distance from junction with Rhine to—	Distance.	Altitude.	Distance from junction with Rhine to—	Distance.	Altitude.
	<i>Miles.</i>	<i>Feet.</i>		<i>Miles.</i>	<i>Feet.</i>
Mainz.....		282.55	Gemünden.....	129.74	
Frankfort.....	24.48	300.8	Wurzburg.....	153.17	548.04
Aschaffenburg.....	52.3	358.16	Schweinfurt.....	174.79	635.34
Wertheim.....	95.75	445.68	Bischberg.....	240.60	763.2

The Main-Danube Canal connects Bischberg with Kehlhofen, 175.80 kilometers distant, where it terminates at an elevation of 330.9 meters (1,082 feet) above sea level, having crossed a divide 418 meters (1,367 feet) above sea level, by means of 100 locks.

Navigation on the Mosel begins at Coblenz, with the following distances and elevations to La Lobe, a short distance south of Metz:

Locality.	Distance.	Altitude.	Locality.	Distance.	Altitude.
	<i>Miles.</i>	<i>Feet.</i>		<i>Miles.</i>	<i>Feet.</i>
Coblenz.....		198	Conz.....	122.78	414.3
Cochem.....	31.56	258.51	Kemich.....	143.79	455.16
Traben.....	65.55	416.2	Perl.....	148.88	459.09
Zeltingen.....	75	333.84	Diedenhofen.....	164.98	490.17
Ours.....	79.91	351.37	Metz.....	189.71	532.35
Trier.....	117.56	408.77			

A canal rising 9.1 meters in 20.4 kilometers, through the medium of four locks, connects Metz with La Lobe.

The Neckar empties into the Rhine on the north side of Mannheim, and navigation extends to Kannstadt. From the Rhine to Heilbrun a continuous cable chain, lying in the deepest channel, is used to aid the tugs in ascending the rapid current. Frequently as many as twelve to sixteen barges are towed upstream, one attached to the other in single procession.

The following is a scheme of distances and altitudes on the Neckar, starting from Mannheim:

Locality.	Distance.	Altitude.	Locality.	Distance.	Altitude.
	<i>Miles.</i>	<i>Feet.</i>		<i>Miles.</i>	<i>Feet.</i>
Mannheim.....		294.6	Kirchheim.....	83.76	549.54
Heidelberg.....	14.96	425.1	Kl. Ingersheim.....	92.96	590.94
Diedesheim.....	49.74	425.1	Marbach.....	98.92	617.85
Bottlingen.....	55.36	452.88	Neckerems.....	110.48	659.68
Offenau.....	60.94	464.82	Mühlhausen.....		669
Heilbrun.....	71.08	495.87	Kannstadt.....	115.33	694.86
Lauffen.....	78.91	529.98			

The Lippe is navigable from its confluence with the Rhine at Wesel as far as Lippstadt, a distance of 180.3 kilometers (112 miles). The elevation, equal to 75 meters (245.25 feet), is overcome by twelve locks.

The navigation of the Ruhr begins at Ruhrort, on the Rhine, and extends to Witten, a distance of 75.5 kilometers (46.9 miles). The intermediate rise of 81.9 meters (267.6 feet) necessitates the use of 11 locks.

Omitting six or eight short canals of little importance, there remains two of considerable interest. One, beginning at a point just below Strassburg, at an elevation above sea level of 131.159 meters (428.88 feet), is called the Rhine-Rhone Canal. It extends to the borders of France, a distance of 141.3 kilometers (87.8 miles). It crosses an elevated area at a height of more than 350 meters (1,144.5 feet), and terminates at an elevation of 345 meters (1,128 feet). The number of locks employed is 88. The other canal, designated as the Rhine-Marne Canal, begins at the Rhine near Strassburg, extending to the French border, a distance of 110.7 kilometers (68.73 miles), crossing a plateau at an elevation of 267.8 meters (875.7 feet), and terminates at an altitude of considerably less. It has 66 locks.

In all of the preceding the locks have various depths, the shallower ones being 1.20 meters (3.9 feet), while the deeper ones are as much as 2.06 meters (6.72 feet). Only the smaller and light-draft vessels navigate these streams.

Previous to the Franco-Prussian war of 1870-71, navigation on the Rhine between Mannheim and Strassburg was carried on only by the highest-draft vessels, 1 meter being probably a fair average depth for the water, whereas at this time the water is more than double this depth.

The same improvements have been made in other waterways, especially those near the French frontier.

WALTER J. HOFFMAN,

Consul.

MANNHEIM, *November 12, 1898.*

TRANSPORTATION FACILITIES IN ALSACE-LORRAINE.

In a report published in *Commercial Relations, 1896-97*, Commercial Agent Thieriot, of Freiburg, gives the following table of railroads and canals in Alsace-Lorraine:

RAILROADS.

(Owned by State:	Miles.
Existing lines.....	992
Lines in course of construction—	
Masmünster-Scwen	5.4
Woerth-Lembach	5.22
Bischweiler-Oberhofen	2.28
Lauterburg-Wissenburg	12.30
Busendorf-Villingen	13.85
Bollweiler-Colmar	22.06

Private lines:

Existing lines—	Miles.
Railways of Rappoltweiler.....	2.45
Railways of Kayersberg.....	15.9
Strassburg-Markolsheim.....	33.71
Boofzheim-Rheinan.....	1.55
Kraft-Erstein.....	3.48
Strassburg-Truchtersheim.....	9.32
Mülhausen-Wittenheim.....	16.71

CANALS.

Moselle.....	10.56
Saar.....	27.22
Lauterfingen.....	2.49
Rhine-Marne.....	64.62
Rhine-Rhone.....	82.02
Brensach.....	12.43
Colmar.....	8.08
Breisach.....	4.04
Hünigen.....	17.40
Strassburg (Ill-Rhine).....	4.35

GREECE.

PIRÆUS-LARISSA RAILWAY.

The line from Piræus to the twenty-eighth kilometer (eighteenth mile) is open and the rails laid. There remain some earthworks to be constructed, and the laying of a bridge at the junction of the Attica line. The line from the twenty-eighth to the forty-fifth kilometer is half finished; the most important work still to be done is the completion of the trench and sanitary works at Boyati (twenty-first mile), the completion of rock cuts—one at Mazi (twenty-eighth mile) and another at the twenty-second mile—a tunnel 100 meters (328 feet) in length, and many small bridges. The section from Mazi to Cacosalesi (twenty-ninth to thirty-seventh mile) is in a very unfinished condition, especially in regard to earthwork. The land generally is of a stony nature. The section from Cacosalesi to Schismatari is almost finished. A few half-finished trenches remain to be completed. The section from Schismatari to Thebæ (17.4 miles) is ready for use.

With the exception of 2,000 feet along the seacoast and some rock cutting, the branch line to Chalcis is nearly opened up to the tenth mile.

To complete the roadway from Piræus to Thebæ, including the branch to Chalcis, it will be necessary to excavate 480,000 cubic meters (16,951,680 cubic feet) of earth, to construct about 60,000 cubic meters (2,118,960 cubic feet) of seacoast foundation, to adjust slopes, and to execute other works for the purpose of improving sanitary conditions. About 3,400 cubic meters (120,074 cubic feet) of masonry work of vari-

ous kinds, the erection of 19 tons and the purchase and erection of 27 tons more of metallic platforms, and the construction of a tunnel 100 meters (328 feet) in length, will also have to be accomplished.

As before stated, a road 35 miles in length has been railed, but will need some repairs, especially from Piræus up to the twenty-eighth kilometer (eighteenth mile), and there remain 41 miles to be railed.

The section from Thebæ to Livadia, 39 kilometers (24 miles), is finished; some earthwork and the purchase and location of a few tons of metallic platform remain to be completed.

On the section from Livadia to Dadi, 42 kilometers (26 miles), 109,000 cubic meters (3,849,444 cubic feet) of earth remain to be excavated, 2,950 cubic meters (139,498 cubic feet) to be constructed, besides the purchase and locating of 130 tons of metallic platform.

On the section from Dadi to Lianocladi, 41 kilometers (25½ miles), most of the work is about half finished.

On the branch to Santa Marina, 19.7 kilometers (12.2 miles) in length, a few embankments have still to be completed.

GEORGE HORTON,
Consul.

ATHENS, *March 12, 1898.*

PATRAS.

TRANSPORTATION FACILITIES.

Consul Yates writes from Patras, under date of November 18, 1898:

Nearly all of the principal towns of the Peloponnesus are now accessible by railway, the various routes along the southern coast having been extended during the past year, and also from the eastern coast into the interior.

The boats of the following steamship companies call regularly at Patras: The Cunard Company; Layland Company, of Liverpool; Austrian Lloyd, of Trieste, and the Messageries Maritimes, of Marseilles. The Anchor Line and the Phelps Brothers Company call regularly during the currant-shipping season—August to December. The last two lines ply between New York and Mediterranean ports and carry the bulk of Greek currants destined for America.

CORINTH-ÆGINA CANAL.

The ship canal across the Isthmus of Corinth, and connecting the Gulf of Corinth with the Gulf of Ægina, has not proved to be a success from a financial or maritime point of view. This is said to be due to the dangers arising from the narrowness of the waterway (82 feet) and the force of the currents caused by the variation in tides at the outlets of the canal.

ITALY.

CASTELLAMARE.

Commercial Agent Huntington writes from Castellamare, June 20, 1897:

The concession for a railway from Castellamare to Sorrento has been decreed by the Government, and the province and communes will contribute \$2,000,000 toward its construction.

No project has as yet been decided upon, but two have been presented, one for \$3,250,000 at ordinary gauge, and another for \$2,000,000 with narrow gauge.

Neither of these sums are considered to be sufficient by competent judges, and as there are many tunnels to be made, and the line will be expensive, the traffic is not likely to pay interest on the outlay required.

CATANIA.

Under date of October 28, 1897, Consul Brühl writes from Catania:

Direct transportation facilities are nearly as good as from Messina and Palermo during the season from October to May. Steamers of the Anchor and Phelps English lines, the Italian Florio, the Austrian line, and English tramp steamers call here when needed during that season, taking freight for the United States at Palermo, Messina, Gergenti, or Licata. During the summer season goods sold are often shipped via Genoa or English ports.

Rates of freight vary somewhat, according to the quantity awaiting shipment. Fruit boxes paid last year from 1s. 2d. to 1s. 4d. (28 to 30 cents); now 1s. 2d.; but one agency offers a reduced rate now—1s. (14 cents) per box to New York. Almonds and nuts, 1s. 9d. to 2s. (42 to 48 cents) per bag of 100 kilograms (220 pounds). Brimstone, in bulk, all the way from 5s. to 7s. (\$1.21 to \$1.70) per ton, according to circumstances, and refined sulphur, in bags, 12s. (\$2.91) per ton. Time in transit, if direct from Catania (which is seldom the case) to New York, eighteen to nineteen days; if via Palermo and Messina, twenty-five to thirty days.

GENOA.

Consul James Fletcher writes under date of Genoa, November 1, 1897:

The North German Lloyd steamships make the voyage between New York and Genoa in eleven days, touching at Gibraltar on their eastern and western passage, thus giving passengers a fine opportunity to visit the famous "Rock" and quaint old town. The Hamburg-American steamers, which have entered this port frequently in the winters of 1894, 1895, and 1896, have sometimes made the run in nine days, but without touching Gibraltar. Steamships of other companies make this voyage in between eighteen and forty days.

Owing to the deficient wheat and corn crops in Europe this year, and to the large stocks in the United States, freight rates to our western shores have increased nearly 20 per cent during the past few months, acting as an inducement to "ocean tramps" and other cargo boats to hie westward and bring to hungry Europe a portion of the surplus food supply raised on American soil.

This increase can be only temporary, at least, so say business men.

The old rates on tobacco were 20s. (\$1.80) per hoghead; the new rates are 25s. (\$6) per hoghead.

On petroleum the old rates were 2s. 3d. (54 cents) per barrel; the new rates are 3s. 3d. (78 cents) per barrel.

On old rails the former rates were 11s. 6d. (\$2.76) per ton: the present rates are 13s. 6d. (\$3.24) per ton.

LEGHORN.

Under date of October 9, 1897, Consul Smith says that Leghorn has direct communication with the United States by the Anchor Line of steamers, sailing for New York about every two weeks and calling at Genoa, Naples, and, if cargo can be obtained, at other ports of Sicily, southern France, and Spain.

On June 16, 1898, the consul writes:

The Prince Line now has regular steamers every three weeks, and there is a probability that the service may be changed to a fortnightly one. Three new steamers, the *Trojan Prince*, *Spartan Prince*, and *Tartar Prince*, are employed in the service. Leaving here, they call at Genoa and Naples, and from there sail direct to New York. They have accommodations for first-class passengers as well as steerage, the average time of the trip being twenty days. The agents here are Messrs. G. R. Zar & Co., and at Genoa and Naples Messrs. Gastaldi & Co.

MESSINA.

The Creole line of steamers, belonging to Messrs. Reirce, Becker & Iardi, of this city, was inaugurated in February. The service is semi-monthly, and it has proven a great financial success. The agents at New Orleans are Orthwein & Co. The steamers take fruit and general cargo outward and bring full cargoes of cotton, cotton-seed oil, or grain to Barcelona and Genoa. Beginning in December, the Florio Rubatino Company, the largest steamship enterprise in Italy, will extend its service from Bombay, which now, touching at Messina, has its terminus at Naples, to New York. This new competition for the carrying of Sicilian fruit, etc., will no doubt tend to still further reduce freight rates and also lessen the time of transit from twenty-two to seventeen days.

Progress upon the new line, by which passengers can be conveyed from Palermo and other points in Sicily to Rome without change of carriages, by means of a ferry service across the straits, has been rapid, and it will no doubt be in operation in a few months.

RATES OF FREIGHT.

A most material decline in rates to North American ports occurred this year. For the last five years the freight upon a box of lemons has been 1s. 4d. (32 cents), but in January a sweeping cut was made to 8d. (16 cents) on account of a disagreement between the steamship agents who had previously worked in accord, and rates upon other articles were

reduced in the same proportion. To English, French, German, Austrian, Swedish, Norwegian, Black Sea, and Baltic ports there was no cut.

CHARLES M. CAUGHY,
Consul.

MESSINA, *October 31, 1898.*

TURIN.

Consul Mantius writes, under date of September 4, 1897:

Work on the new Simplon system is satisfactorily progressing. During the past year, the project of constructing a railroad over the Grand St. Bernard has been pushed. The engineering work has already begun and but little tunneling is required. This new connection will add, when completed, to the importance of Turin as a commercial center.

Since a practical business man is holding the portefeuille of railroad minister, the time of the trains running between the principal Italian cities has already been reduced. Connection with the St. Gothard is to be made without change of cars. The work of renewing and enlarging the railroad depot at Turin was commenced months ago; still little has been done to modernize the railroad system and to make it more efficient in this section of the country.

The expectation that the Cunard Line would run its steamers to Genoa has not been realized; the North German Lloyd, however, has reduced freight rates and seems to be more anxious to please its customers than in former years. A great improvement in that direction is certainly noticeable and should be properly appreciated.

Consul McElrath adds, November 16, 1898:

Turin is the most important frontier city in Italy. It is a railway center and the natural distributing point for a large and busy section of outlying country. Direct lines of railway run from here to France, via the Mount Cenis tunnel, reaching French territory in three hours, and by a southern line of railway, via Savona, to the Riviera. It also has direct connections with Switzerland and northern Europe, by the St. Gothard route, via Novara. Direct lines run east to Venice and Bologna; and Genoa, the port of entry and shipping for most of the business of this district, is but three and one-half hours distant.

VENICE.

STEAMERS FROM VENICE TO EASTERN AFRICA.

Consul H. A. Johnson writes, under date of Venice, March 22, 1897:

By way of experiment, the Austrian Lloyd Steamship Company will inaugurate a new line of steamers to bring Venice into closer connection with ports on the eastern coast of Africa. The first voyage is to be made by the steamer *Polluce*, of 2,046 tons and 1,500 horse-power, with an average speed of 12 to 13 miles per hour. This steamer is to leave Trieste on the 21st instant, and is scheduled to leave Fiume on the 3d of April (taking on board an agent of the company to report the result of the experiment), bound for Bombay and touching at the following ports: Lamu, Mombasa, Tanga, Pangani, Zanzibar, Bogamoya, Dar-es-Salaam, Kilva, Lindi, Ibo, Mozambique, Quilimane, Chinde, Beira, Inhambane, Delagoa Bay, and Durban (Natal). Freight will be accepted also for East London, Algoa Bay, Port Elizabeth, and Cape Town. The prices for passage are as follows: Second class, \$144; third class, \$57.60, including food, and \$43.20 without food.

REGULAR STEAMSHIP LINES AT VENICE.

On November 8, 1897, Consul Johnson sent the following list of steamship companies that give regular service to and from Venice:

1. *Navigazione Generale Italiana*.—Direct service every fortnight to Alexandria, Egypt; weekly service to Corfu, Pireous, Constantinople, Danube; weekly service to Trieste; weekly service to Sicily and the west, in connection with the Orient Line, the Barbary States, and the east.

2. *Austrian Lloyd Steam Navigation Company*.—Service three times a week to Trieste, besides others, irregular, connecting with lines to the Adriatic, the east, Indo-China, Africa, and Brazil.

3. *Peninsular and Oriental Steam Navigation Company*.—Service every three weeks to Port Said, connecting with lines to the Red Sea, Orient, and Australia.

4. *Puglia Steam Navigation Company*.—Weekly service to Puglia, Catania, and Messina; fortnightly service to Dalmatia, Albania, Montenegro, Puglia, and Sicily; irregular service to Puglia.

5. *Fiume-Venice Steamship Line*.—Weekly line, Venice-Fiume, in winter; biweekly service in summer.

6. *Adria Royal Hungarian Steamship Company*.—Daily service, with irregular sailings, via Fiume, for Malta, Sicily, Marseilles, Nice, ports of the north, and America.

7. *Leyland Line, Liverpool*.—Two monthly irregular sailings to Liverpool, in connection with the northern ports and America.

8. *A. C. de Freitas Company Line, Hamburg*.—Irregular sailings to Hamburg, in connection with the northern ports and America.

9. *Mediterranean and New York Line*.—Monthly service from Venice, or, in want of cargo, from Trieste to New York.

10. *Adriatica Steamship Company, Bari*.—Irregular service for the ports of Puglia, Sicily, Naples, Leghorn, Genoa, and Savona.

11. *Baily and Leatham, London*.—Two irregular sailings every month to London, in connection with the northern ports.

12. *Thomas Wilson Sons Company, Limited, Hull*.—Two irregular monthly sailings to Hull, in connection with the northern ports.

13. *Canard Steamship Company, Limited, Liverpool*.—Two irregular monthly sailings to Liverpool, in connection with the northern ports and America.

14. *Anchor Line, Glasgow*.—Approximately monthly service from Trieste and occasionally from Venice to New York, in connection with all the ports of the United States.

NEW RAILWAY LINE—SAN GIORGIO DI NOGARO TO CERVIGNANO.

On April 8, 1898, the consul writes:

On the 15th of October, 1897, a short but important line of railway was inaugurated from San Giorgio di Nogaro to Cervignano, which connects, at Monfalcone, the State railway line of Austria (Cormons-Trieste) with the local Venetian line (Venice-Portogruaro-San Giorgio and Nogaro).

This branch reduces the distance between Venice and Trieste some 65 kilometers (40.38 miles), making the duration of the journey something over two hours less. The idea of a direct line from Trieste to Venice originated on the day in which the Austrian Government, in order to facilitate the communication with the Friulian plain, constructed the short line of Monfalcone-Cervignano of 17 kilometers (10.5638 miles). Then, in accordance with Austrian-Italian commercial treaties, the two Governments, in the interest of the frontier towns and villages, completed the line San Giorgio-Portogruaro-Mestre and Monfalcone-Cervignano. This new connecting line will be of marked advantage to the Venetian estuary, which will thereby have direct railway connection with Trieste and the Austrian Friuli.

Cervignano, a small village on the Austrian border, with the installation of this new line, will acquire special importance. The line was constructed by Antonelli and Dreossi, both natives of Friuli. From the station of Cervignano, which will be considerably enlarged and improved, the line flanks the city and crosses the historical river Aussa by means of a small iron bridge. It then crosses the provincial highway of Palmanova, and, after traversing the Austrian frontier, connects with the existing Venetian line Palmanova-San Giorgio di Nogaro at a short distance from San Giorgio.

The line from Venice to Trieste (Venice-Udine-Trieste) has a length of 224 kilometers, while the new route, Venice-Portogruaro-Cervignano-Trieste, is 159 kilometers long—a difference, as stated, of 65 kilometers (40.38 miles). The direct trains on the former line employed six hours in going from Venice to Trieste, while the new line does not require more than four hours to make the journey. The reduction in time is accompanied by a reduction in the cost of the trip. Formerly, the price of a ticket from this city to Trieste, first class, was 27.05 lire (\$5.27). It now costs 17.75 lire (\$3.42)—a reduction of 10.30 lire (\$1.98). As yet, a ticket can not be purchased direct from the station at Venice to Trieste, the traveler being obliged to procure a ticket from Venice to Portogruaro, and from that place to Trieste. This slight inconvenience, however, will be shortly avoided, and tickets will be obtainable from Venice direct.

CANAL IMPROVEMENTS.

Under date of December 15, 1898, Mr. Johnson continues:

The navigable channel of the Rocchetta Canal as far as the San Marco Canal has been kept at the average depth of 10 meters below the mean level of the sea.

The right bank of the San Marco Canal has been cut away, broadening the navigable channel to 8.50 meters.

The depth of the Giudecca Canal has been maintained at 8.50 meters. From the quays San Biagio and Sant' Euphemia a new channel has been cut, making the navigable portion of the Giudecca Canal 200 meters broad.

The wharf on the east mole of the maritime station has been extended to the Scomenzera Canal, and the station itself has been enlarged by the lengthening of the mole. New lighting facilities have also been introduced and new rails laid.

The rails of the central depot have been joined to those of the wharves of Santa Marta, of the bonded warehouse, and of the adjacent warehouses.

Arrangements are complete in the Scomenzera Canal for carrying cars by ferry.

At the station in the Colombola, canal slips are in course of construction for the service of railroad ferryboats.

PORT OF CHIOGGIA—NEW STEAMSHIP LINES.

There is in course of construction a navigable channel, 4 meters below the mean sea level, from the Caroman Canal through the inner basin of the port, to the opening of the Lombardo Canal.

A wharf for the railway station of Chioggia is in course of construction.

These improvements, it will readily be seen, are generally of the character to benefit local trade alone. The new marking out of the channel of approach to St. Marks Basin and the multiplying of facilities at the maritime station are of distinct service to ocean-going ships.

Venice seems to be taking her share in the general reawakening of enterprise in shipbuilding which at this moment is apparent in Italy. Two new steamship lines have recently been organized. One of them aims to compete with English bottoms in the carrying trade between the Black Sea and this country. Orders for four vessels have been awarded, and the second steamer was launched at Genoa some weeks ago.

The second company, organized with a capital of \$200,000, intends to engage in the Adriatic trade.

MALTA.

Malta is in constant touch with and has ample facilities to reach the outer world. Nearly all the lines of steamers to and from the East via the Suez Canal call here for coal or provisions, to load and unload freight and passengers.

The merchant marine is protected by the marine police, supplemented, when necessary, by the Mediterranean fleet of Great Britain, a contingent of which is always in this port and the entire fleet most of the time.

The coastwise transportation facilities between Malta and Sicily consist of a daily line of steamers, which carry the mails, as well as passengers and freight. A fleet of sailing boats also plies between Malta and Syracuse, Sicily, carrying freight, especially fruit, vegetables, wines, etc.

Communication between Malta and Gozo takes place daily by the regular mail boat, which also carries passengers and freight. Gozo supplies Malta with large quantities of vegetables, fruits, wine, lace, and other articles.

A local railroad is in operation between Valetta, the capital of Malta, and Citta Vecchia, a distance of about 8 miles.

D. C. KENNEDY, *Consul*.

MALTA, *October 1, 1897.*

DIRECT STEAMSHIP COMMUNICATION WITH THE UNITED STATES.

Malta, it would appear, has at last secured direct communication with the United States. I have just received word that the Mediterranean and New York Steamship Company, Limited, has decided, after several months of investigation, to have some of its ships leave New York for Malta direct, and thence run to Trieste. It is intended to run the boats regularly, provided, of course, there is sufficient encouragement given by purchasers and shippers.

I believe that if our merchants display a little activity in this direction, it will result in the advent of many new lines of our goods at Malta, as well as an increase in the demand for those of our wares already in the field. The great and almost insurmountable obstacle which has for many years hindered the sale of our goods here has been the lack of direct communication with American merchants. All goods that have reached Malta have come by way of transshipment from ports of the United Kingdom and Europe, and this has meant vexatious delay, damage to goods incidental to repeated handling, and high freight rates. The new line will change all of this.

To the American merchant who has goods to ship to Trieste, I would say that by giving this line the preference he will be lending encouragement not only to this company, but to an increase of trade with Malta.

Further information as to the above line may be obtained from the New York agents, Phelps Bros. & Co., 11 Broadway.

JOHN H. GROUT, Jr.,
Consultant.

MALTA, *January 25, 1899.*

NETHERLANDS.

AMSTERDAM.

NORTH SEA CANAL.

I submit the following report on the canal from Amsterdam to the North Sea:

Length.—Length of the canal from Ymuiden (outer ends of the piers to Amsterdam, 16.78 miles; length from the end of the piers to the main and small lock, 1.55 miles; length from the end of the piers to the great (new) lock, 1.86 miles; length of the main piers in sea, 0.75 miles; length of the canal under the management of the Government (Rijks-waterstaat) from Ymuiden, 14.292 miles; the other part is under the management of the municipality of Amsterdam.

Depth and breadth.—Between the piers, 260 meters (853 feet) broad; navigable part, 200 meters (656 feet). On account of the deposit of loose blocks to protect the massive piers, depth 9.5 meters (31 feet) below Amsterdam level, the navigable part for large ships in the outer harbor is 250 meters (820 feet) in width, 31 feet in depth below Amsterdam level. The breadth gradually decreases to 121 feet in the inner harbor. The outer entrance to the new lock has a width of 47 meters (154 feet); depth, 9.5 meters (31 feet) below Amsterdam level.

Main canal.—Width 36 meters (118 feet) at the curves near Velren and Buitenhuren, and at the mooring stages for ships carrying gunpowder, 54 meters (177 feet); near the Hambrug, 40 meters (131 feet); thence to the petroleum docks, 46 meters (142 feet), and beyond, 40 meters (131 feet), gradually increasing to 50 meters (164 feet) close to Amsterdam. The inner entrance to the new lock has a bottom width of 53 meters (174 feet), and near the main lock 40 meters (131 feet). The depth of the main canal from the new lock to Amsterdam is 9 meters (29 feet) below Amsterdam level.

Locks.—At Ymuiden, there are three locks and a discharge lock.

New locks.—Length of the lock chamber, 225 meters (738 feet); width of the lock chamber, 25 meters (82 feet); depth of the sill below Amsterdam level, 10 meters (32 feet).

The locks are electrically lighted. The doors, etc., are moved by electricity.

Main lock.—Length of the lock chamber, 120 meters (392 feet); width of the lock chamber, 18 meters (59 feet); depth of the sill below Amsterdam level, 8 meters (26 feet).

Small lock.—Length, 70 meters (229 feet); width, 12 meters (39 feet); depth, 5 meters (16 feet).

Discharge lock.—Width, 10 meters (32 feet); depth, 5 meters (16 feet).

The above-mentioned locks will soon be electrically lighted. The doors are moved by hand winches with chains.

The entrance to the harbor is indicated by two light-houses on the downs, visible at 18 and 19 English miles, and small light-houses on the piers.

Ships are free from harbor and canal dues.

The Orange locks (only for small ships) belong also to the North Sea Canal and give entrance to the Zuider Zee.

There are three locks and one discharge lock. The largest is 90 meters (295 feet) long and 18 meters (59 feet) wide. Depth of the sill below Amsterdam level, 4.5 meters (14 feet).

The two others: Length of the lock chamber, 67 meters (219 feet); width, 14 meters (47 feet); depth, 4.5 meters (14 feet), and the discharge lock is 10 meters (32 feet) wide and 4.5 meters (14 feet) deep.

GEORGE J. COREY,
Consul.

AMSTERDAM, *November 17, 1898.*

ROTTERDAM.

TRANSPORTATION FACILITIES.

The former consul here wrote as follows:

Situated on the New Maas, which at present forms the main outlet of the Rhine, Rotterdam practically enjoys a monopoly of the rapidly increasing trade of this great commercial artery, and can offer cheaper rates and quicker transportation for merchandise destined for or coming from any point along the Rhine, or immediate tributary thereto, than any of the seaport rivals.

The Rhine is now navigable as far as Cologne by boats drawing from 9 to 10 feet of water, and the channel is being constantly deepened. Some of the Rhine boats approach 300 feet in length and have a carrying capacity of nearly 2,000 tons. From Cologne to Mayence, Frankfort, and Mannheim the available depth of the Rhine is from 6½ to 8 feet, and boats of several hundred tons burden proceed as far as to Strassburg, while smaller craft ascend to the very frontiers of Switzerland.

Inland navigation from Rotterdam is not limited to the Rhine. An admirable network of deep and well-kept canals, over 2,200 miles in aggregate length, connects this port with every part of the Netherlands. The creation of a new waterway from Rotterdam to the sea is the great enterprise to which the recent expansion and present flourishing growth of this seaport is immediately attributable.

In 1880 the depth of the waterway was still only 46 decimeters, or a trifle over 15 feet at high water. Since that time the work has been so vigorously pushed that in 1893 the depth had been more than doubled. The average difference between high and low water at the Hook of Holland, where the new waterway pierces the dunes and opens into the sea, is about 5½ feet. At Rotterdam, 16 to 18 miles up the stream, the average difference is about 4 feet, though often much greater.

The following table, taken from official statistics, will show the volume of the traffic along the new waterway:

Year.	Steamers.		Sailing vessels.		Total.	
	Number.	Tonnage.	Number.	Tonnage.	Number.	Tonnage.
INWARD.						
1894.....	4,919	4,068,452	418	174,134	5,337	4,242,586
1895.....	5,022	4,081,033	447	179,226	5,469	4,260,259
1896.....	5,845	4,898,765	449	195,901	6,294	5,094,666
OUTWARD.						
1894.....	4,959	4,029,864	435	189,690	5,394	4,219,554
1895.....	5,045	4,102,153	408	178,590	5,453	4,280,743
1896.....	5,791	4,838,422	429	192,980	6,220	5,031,402

The Hollandsche Yzeren Spoorweg Maatschappij (Dutch Railroad Company), the Maatschappij tot exploitatie van Staatspoorwegen (State Railroad Company), various short-line railroads and street-car companies, besides a network of canals and brick-paved roads, connect the cities and villages of this consular district, and facilities for transportation are excellent.

COMMUNICATION WITH THE UNITED STATES AND OTHER COUNTRIES.

The principal connection between the United States and this consular district is the Netherlands-American Steam Navigation Company, with weekly steamers plying between New York and this port. There is also the Neptune Line, with a weekly service, Rotterdam-Baltimore via Sunderland, and the North Atlantic Transport Line. Goods shipped direct from here to New York or Baltimore may reach the United States in from ten to sixteen days. Considerable merchandise is also shipped via London and Antwerp, principally the merchandise destined for Boston or Philadelphia.

Steamers ply from Rotterdam to Aberdeen, Scotland, every ten days; Baltimore, weekly; Bergen, Stavanger, Norway, on Thursday; Belfast, Dublin, Ireland, on Friday; Bremen, Bremerhaven, weekly; Bilbao, Spain, fortnightly; Bordeaux, France, fortnightly; Capetown and Natal, Africa, monthly; Cardiff, Wales, weekly; Christiania, Norway, fortnightly; Cork, Ireland, fortnightly; Dantzie, Prussia, every eight or ten days; Dunkirk, France, on Wednesday; Dundee, Scotland, Saturday; Glasgow, via Grangemouth, Tuesday and Friday; Grimsby, Tuesday and Saturday; Goole, Tuesday and Saturday; Gothenburg, Sweden, fortnightly; Hamburg, twice a week; Havre, Saturday; Hull, Tuesday, Wednesday, Thursday, and Saturday; Java and Sumatra, Dutch East Indies, every alternate Saturday; Kiel, Lubeck, every three weeks; Königsbergen, Prussia, weekly; Leith, Edinburgh, Glasgow, Tuesday and Friday; Liverpool, Wednesday and Saturday; Lisbon, Portugal, every three or four weeks; London, per Netherlands Steamship Company, direct, Tuesday, Thursday, and Saturday; London, via Harwich, daily; London, per General Steam Navigation

Company, direct, Wednesday and Saturday; London, per London and Rotterdam Steamship Company, Wednesday and Saturday; Manchester, three times in two weeks; Marseilles, Genoa, fortnightly; Middlesbrough-on-the-Tees, England, Tuesday; Newcastle-on-the-Tyne, Friday, in summer also Tuesday; New York, per Holland-America Line, every Thursday; New York, North Atlantic Transport Line, every three or four weeks; Oporto, Portugal, every three or four weeks; Plymouth, Bristol, fortnightly; Southampton, Saturday; Stettin, weekly; West Africa, monthly.

S. LISTOE, *Consul*.

ROTTERDAM, *December 15, 1897.*

NEW STEAMSHIP LINE TO UNITED STATES.

Under date of May 6, 1898, Consul Listoe says:

This week a new steamship service has been opened between New York, Philadelphia, and Rotterdam. Steamers belonging to the company starting the service have already been plying between the aforesaid American ports and Rotterdam since January last, but it is the intention now to make it a regular fortnightly service. The first departing steamer will be the Norwegian steamship *Lovstakken*, from New York on May 10, followed by the steamship *Blaamaanden* on May 25. For the Philadelphia service three steamers—the *Queenswood*, *Cresyl*, and *Arona*—will be used. The line will carry freight only.

FREIGHT RATES FROM ROTTERDAM.

Rates to Capetown, Port Natal, Port Elizabeth, East London, etc., per steamers of Union Steamship Company, Limited.

[Per ton weight.]

	Class 1.		Class 2.		Class 3.		Class 4.	
	Flor. ins.	United States equiv. alent.	Flor. ins.	United States equiv. alent.	Flor. ins.	United States equiv. alent.	Flor. ins.	United States equiv. alent.
St. Helena (including lighterage) per steamer.....	53.9	\$13.08	53.9	\$13.08	53.9	\$13.08	53.9	\$13.08
Capetown, Port Elizabeth (Algoa Bay):								
Per mail steamer.....	47.6	11.56	33.9	8.21	25.0	6.08	22.6	5.47
Per intermediate steamer.....	45.0	10.95	33.6	7.91	25.0	6.08	22.6	5.47
East London (including lighterage):								
Per mail steamer.....	53.9	13.08	41.3	10.03	32.6	7.91	30.0	7.30
Per intermediate steamer.....	51.3	12.48	46.0	9.73	32.6	7.91	30.0	7.30
Port Natal (including lighterage):								
Per mail steamer.....	55.0	13.38	41.3	10.03	32.6	7.91	30.0	7.30
Per intermediate steamer.....	52.6	12.77	40.0	9.73	32.6	7.91	30.0	7.30
Delagoa Bay:								
Per mail steamer.....	57.6	13.99	43.9	10.64	35.0	8.52	32.6	7.91
Per intermediate steamer.....	55.0	13.38	42.6	10.34	35.0	8.52	32.6	7.91

All freights with 10 per cent primage.

Agents at Rotterdam, Messrs. Kuyper, Van Dam & Smeer.

The rates include railroad freight from Nine Elms Station, London, to Southampton.

Bicycles and boots and shoes are considered freight of the first class. Machinery, furniture, merchant iron, hardware, and glassware are in the second class. Iron pipes (loose) are in the fourth class. There is no regular direct connection between Rotterdam and the ports above mentioned.

Freight rates on machinery from Rotterdam to Java by direct steamers of the "Rotterdamische Lloyd."

Weight of pieces.	Batavia, Samarang, Surabaya.		Padang, north coast of Java.		South coast of Java.	
	Florins.	United States equivalent.	Florins.	United States equivalent.	Florins.	United States equivalent.
1 to 2 tons	35.00	\$14.21	40.00	\$16.24	45.00	\$18.27
2 to 4 tons	40.00	16.24	45.00	18.27	50.00	20.30
4 to 5 tons	45.00	18.27	50.00	20.30	55.00	22.33
5 to 8 tons	50.00	20.30	55.00	22.33	60.00	24.36
More than 8 tons	60.00	24.36	65.00	26.39	70.00	28.42

Pieces weighing less than 500 kilograms (about 1,100 pounds) pay according to the second class of the freight tariff. Pieces weighing from 500 to 1,000 kilograms (about 2,200 pounds) pay 5 florins (\$2.03) above the freight of the second-class tariff. Agents at Rotterdam, Messrs. Ruys & Co.

Freight tariff.

To—	Class 1.		Class 2.		Class 3.		Class 4.		Class 5.	
	Florins.	United States equivalent.	Florins.	United States equivalent.	Florins.	United States equivalent.	Florins.	United States equivalent.	Florins.	United States equivalent.
Batavia, Samarang, Surabaya	17.00	\$6.90	21.00	\$8.53	24.00	\$9.74	27.00	\$10.96	32.00	\$12.99
Padang	20.00	8.12	24.00	9.74	27.00	10.96	30.00	12.18	36.00	14.62
All the ports of the north coast of Java from St. Nicholas Point to Banjoe Wangie, inclusive, provided steamer touches at such ports	20.00	8.12	24.00	9.74	27.00	10.96	30.00	12.18	36.00	14.62
All the ports of the south coast of Java, provided steamer touches at such ports	24.00	9.74	29.00	11.77	32.00	12.99	35.00	14.21	40.00	16.24
Atjeh, when steamer touches there	21.00	8.53	25.00	10.51	28.00	11.37	31.00	12.59	36.00	14.62

The freights are per cubic meter or per 1,000 kilograms weight (2,200 pounds), at the option of the steamship company. Furniture is considered freight of the second class. Iron staves, plates, and rails are freight of the first class. Iron work and steel work are freight of the second class. Bicycles are freight of the second class. Glassware is freight of the first class; boots and shoes, freight of the third class; tin work, freight of the first class; iron pipes, freight of the first class. Goods must be delivered alongside the steamers, under the hoisting apparatus of the steamers.

Freight rates per "Peninsular and Oriental Steam Navigation Company."

To—	Machinery.	Furniture, bicycles, boots and shoes.	Hardware.	Glassware.
Columbo.....			(a)	
Rangoon.....	\$10.34 to \$15.21	\$9.12	\$7.30	\$4.87 to \$10.34
Manila.....	8.52 to 11.56	\$9.12 to 10.34	\$9.12 to 10.34	9.12 to 10.34
Tientsin.....	9.73 to 12.77	10.34 to 11.56	10.34 to 11.56	10.34 to 11.56
Perth.....	19.46	19.46	19.46	19.46
Wellington.....	18.25	18.25	18.25	18.25
Aden.....	8.52	8.52	8.52	6.80
Madras.....	9.73	9.73	9.73	9.73
Bangkok.....	7.91 to 10.95	8.52 to 9.73	8.52 to 9.73	8.52 to 9.73
Hiogo.....	5.88 to 9.12	6.60 to 7.91	6.60 to 7.91	6.60 to 7.91
Melbourne.....	14.60	14.60	14.60	14.60
Brisbane.....	16.42	16.42	16.42	16.42
Auckland.....	18.25	18.25	18.25	18.25
Bombay.....			(b)	(b)
Calcutta.....			(a)	(a)
Singapore.....	5.47 to 8.52	6.08 to 7.30	6.08 to 7.30	6.08 to 7.30
Yokohama.....	6.08 to 9.12	6.60 to 7.91	6.60 to 7.91	6.60 to 7.91
Adelaide.....	14.60	14.60	14.60	14.60
Hobart.....	17.03	17.03	17.03	17.03

a Fluctuating between \$5.35 and \$7.91.

b Fluctuating between \$6.74 and \$7.91.

Five per cent primage in addition charged per 40 cubic feet, or 20 hundredweight.

The steamship company is not bound to take goods at the above rates.

FREIGHT RATES OF THE ROYAL MAIL STEAM PACKET COMPANY FROM ROTTERDAM
(VIA SOUTHAMPTON) TO CALLAO AND VALPARAISO.

Machinery, furniture, iron (black, corrugated), iron fencing, iron sheets in cases, iron tanks, iron vises, hardware, bicycles, glassware, boots and shoes, 47.6 florins (\$11.55) per ton plus 5 per cent per 40 cubic feet, or 1,000 kilograms (2,200 pounds) plus 6d. (12 cents) per ton for wharfage at Colon; for Peruvian ports, 2 florins (49 cents) per set of bills of lading for consular visé.

Iron pipe, pipes and bends (cast iron for underground use) not exceeding 6 inches in diameter, according to weight; over 6 inches but not exceeding 12 inches in diameter, according to weight and 5 florins (\$1.22) additional; above 12 inches in diameter, according to measure when stacked.

The foregoing rates apply only to packages and pieces not exceeding 2 tons in weight.

Agents at Rotterdam, Messrs. Vroeg & de Wijis.

FREIGHT RATES TO PERNAMBUCO, MONTEVIDEO, BAHIA, ROSARIO, RIO DE JANEIRO,
AND BUENOS AYRES.

There are no direct lines of steamers from this port to Brazil and River Plate. Goods from this port are therefore generally sent on through bills of lading via Antwerp at the syndicate rates of the North German Lloyd, Lamport & Holt Line, Prince Line, Deutsche Dampfschiffahrt Gesellschaft "Hanza," and Royal Mail Steam Packet Company.

Agents at Rotterdam, Messrs. Hudig & Blokhuyzen.

The following rates are to Montevideo and Buenos Ayres:

Machinery, pieces of ordinary dimensions up to 2 tons, per 40 cubic feet or 2,200 pounds, 39 florins (\$9.49) plus 10 per cent.

Furniture, 24 florins (\$5.84) plus 10 per cent; furniture (bent wood), 21.6 florins (\$5.23) plus 10 per cent; iron castings, 39 florins (\$9.49) plus 10 per cent; iron, angle, bar, bundle, hoop, plate, and scrap, in bulk, 29 florins (\$7.06) plus 10 per cent; iron, galvanized, angle, bar, sheet, ties, etc., 34 florins (\$8.27) plus 10 per cent.

Hollow ware, aluminum, iron, tin, brass, enameled, freight when measured amounting to not less than twice the amount of the freight when weighed, 26.6 florins

(\$6.45) plus 10 per cent. When the freight computed by measure amounts to less than twice the amount of the freight when weighed, 39 florins (\$9.49) plus 10 per cent.

Hardware, 39 florins (\$9.49) plus 10 per cent.

Bicycles, 39 florins (\$9.49) plus 10 per cent.

Glassware, 21.6 florins (\$5.23) plus 10 per cent.

Boots and shoes, 49 florins (\$11.92) plus 10 per cent.

Malleable iron tubes other than boiler tubes, per 1,000 kilograms (2,200 pounds), unflanged, 29 florins (\$7.06) plus 10 per cent; flanged, 34 florins (\$8.27) plus 10 per cent.

Cast and wrought iron underground pipes up to 4 inches inside diameter, 31.6 florins (\$7.66) plus 10 per cent; over 4 inches and up to 8 inches diameter, 34 florins (\$8.27) plus 10 per cent; over 8 inches and up to 24 inches diameter, 36.6 florins (\$8.88) plus 10 per cent; over 24 inches in diameter, 46.6 florins (\$11.31) plus 10 per cent.

Ground pipes up to 4 inches in diameter, 31.6 florins (\$7.66) plus 10 per cent; over 4 inches and up to 8 inches diameter, 34 florins (\$8.27) plus 10 per cent; exceeding 8 inches in diameter, 36.6 florins (\$8.88) plus 10 per cent.

Rain-water pipes up to 4 inches in diameter, 36.6 florins (\$8.88) plus 10 per cent; over 4 and up to 8 inches in diameter, 39 florins (\$9.49) plus 10 per cent; exceeding 8 inches in diameter, 41.6 florins (\$10.10) plus 10 per cent, to Bahia, Rio de Janeiro, and Pernambuco.

Malleable-iron tubes other than boiler, per 1,000 kilograms (2,200 pounds), unflanged, 47.6 florins (\$11.56) plus 10 per cent, 37.6 florins (\$9.12) plus 10 per cent; flanged, 52.6 florins (\$12.77) plus 10 per cent, 43.6 florins (\$10.58) plus 10 per cent.

Cast and wrought iron underground pipes up to 4 inches diameter, 47.6 florins (\$11.56) plus 10 per cent, 37.6 florins (\$9.12) plus 10 per cent; over 4 inches up to 8 inches, 52.6 florins (\$12.77) plus 10 per cent, 42.6 florins (\$10.34) plus 10 per cent; over 8 and not exceeding 15 inches, 57.6 florins (\$13.99) plus 10 per cent, 47.6 florins (\$11.56) plus 10 per cent; over 15 inches in diameter by special agreement.

Cast and wrought iron soil pipes up to 4 inches diameter, 47.6 florins (\$11.56) plus 10 per cent, 37.6 florins (\$9.12) plus 10 per cent; over 4 and up to 8 inches diameter, 52.6 florins (\$12.77) plus 10 per cent, 42.6 florins (\$10.34) plus 10 per cent; exceeding 8 inches in diameter, 57.6 florins (\$13.99) plus 10 per cent, 47.6 florins (\$11.56) plus 10 per cent.

Cast and wrought iron rain-water pipes up to 4 inches in diameter, 52.6 florins (\$12.77) plus 10 per cent, 42.6 florins (\$10.34) plus 10 per cent; over 4 and up to 8 inches diameter, 57.6 florins (\$13.99) plus 10 per cent, 47.6 florins (\$11.56) plus 10 per cent; exceeding 8 inches diameter, 67.6 florins (\$16.42) plus 10 per cent, 52.6 florins (\$12.77) plus 10 per cent per 40 cubic feet.

Pieces or packages up to 2 tons, by measurement, 52.6 florins (\$12.77) plus 10 per cent per 1,000 kilograms, 42.6 florins (\$10.34) plus 10 per cent by weight, 57.6 florins (\$13.99) plus 10 per cent per 40 cubic feet or 1,000 kilograms, 47.6 florins (\$11.56) plus 10 per cent.

Goods for Rosario are charged 5 florins (\$1.22) more than for Bahia.

The statement of freight rates given above is of course only an extract of the full tariff of freight rates; but as the rates vary for such an immense number of articles it was practicable to quote rates only for articles in which our exporters are chiefly interested.

S. LISTOE,
Consul.

ROTTERDAM, December 8, 1898.

RUSSIA.

RAILROADS.

The mileage of Russian railroads was considerably increased during the year 1898. Of the newly constructed roads, the principal are on the Trans-Siberian line section from Obi to Krasnoyarsk, 471 miles, and from Tiaga to Tomsk, 59 miles. Regular trains have been placed on the line from Vologda to Archangel, 394 miles. The following lines have been opened, viz: The Moscow-Jaroslav-Archangel, the Riazan-Ural and Moscow-Windau-Rybinsk, in the Moscow region; Lugansk-Millerovo, in the region of the Donetz basin; and Lukov-Lublin, in the Vistula region. The Russian railroads, on January 1, 1899, consisted of twenty-eight connecting lines, of which eighteen are controlled by the Government and ten by private companies, viz:

	Miles.
Baltic and Pskov-Riga	618
Catherininsk	649
Kursk-Kharkov-Sevastopol	982
Libau-Romny	826
Moscow-Brest	684
Moscow-Kursk-Nizhni Novgorod	701
Nikolaevsk	604
Perm-Tiumen	823
Poliessk	953
Vistula	820
Riga-Orel	785
Samara-Zlatoust	987
St. Petersburg-Warsaw	882
Western Siberian	882
Central Siberian	535
Syzran-Viazma	865
Kharkov-Nikolaev	791
Southwestern	2,433
Warsaw-Vienna	307
Vladi-Caucasian	905
Ivangorod-Dombrovsik	300
Lodz	17
Moscow-Windau-Rybinsk	545
Moscow-Kazan	803
Moscow-Voronezh	1,030
Moscow-Jaroslav-Archangel	1,071
Riazan-Ural	1,797
Southeastern	2,288

The lines not connected with the general system are:

	Miles.
Baskuchank	48
Trans-Caucasian	694
Trans-Caspian	938

The local roads are:

	Miles.
Irinovsk	36
First Society of Railroads.....	217
Sestroretsk	23
Tsarskoe-Selo	17

The total length of the Russian railway lines (with the exception of the Finland railroads, 1,590 miles long, which are controlled by their own directors, officers, and statutes) is 26,797 miles. This summary of the railroads in operation does not give a full idea of the extent of Russian railroad mileage at the beginning of the present year, as a number of lines are in course of construction, which, when completed, will furnish a total of 7,015 miles. On many of the roads under construction temporary communication was opened last year, and others will be opened in the near future.

The most important line under construction is the Poltava-Kief, which will furnish an outlet for the products coming from a rich and densely populated region to Kief and farther west. The Poltava government is in the rich black-earth belt, the principal occupation of its inhabitants being agriculture. This, it is estimated, will furnish 219,355 tons of freight annually.

It is thought that the projected line from Nizhni Novgorod south will carry 129,032 tons the first year, and that its business will increase rapidly.

It is proposed to construct a line from Zemetchina, on the Syzran-Viazma Railroad, to Kustarevka, to furnish an outlet to an area of 1,445 square miles, with a population of 112,000.

A line will be built from St. Petersburg southward to Kief, which will shorten the route 166 miles.

Measures will be taken to increase the capacity of the Novorossisk branch of the Vladi-Caucasian Railroad by constructing a new line from the Caucasian station to Ekaterinodar, and by laying down a second track from Ekaterinodar to Novorossisk, which is the terminal point for goods exported by the Vladi-Caucasian Railroad. The movement of freight on this line in 1895 amounted to 601,613 tons of grain and 64,355 tons of miscellaneous freight. Now that the Tohoretsk-Tsaritsine line is completed, cargo from the Volga will move on the Novorossisk branch.

In addition to the foregoing, several roads will be constructed by the Government, viz: From Vladivostok to Kerch, which will run through a rich mining district; the Volchansk-Kupiansk line, 73 miles, a local road affording an outlet to an area of 1,288 square miles, with a population of 136,000; the Piatihotka-Koristovka line, which will connect the Catherininsk and Kharkov-Nicolaev railroads and will be also of local importance.

A line will be built from Chiatory to Darkveti, 4 miles long. In order to develop the manganese industry of Transcaucasus the so-called Chi-

atury branch of the Transcaucasian railroad was constructed in 1891, which carried 80,645 tons of manganese during the first year and a total of 193,549 in 1896, showing the development of the manganese industry in that region. But this branch does not meet the requirements, as the mines extend beyond Chiatury, and the line will be extended.

Concessions have been granted to private corporations to build the following lines: From Yalta to Bahchisarai, 45 miles; from Novozubkovo to Novgorod-Seversk, 76 miles; from Belgorod to Suny, 96 miles; from Holm to Belzshetsk, with a branch from Zamostie to Lublin, 119 miles; from Valk to Marienburg, with branches, 129 miles, and three small lines in the manganese region in the Transcaucasus, 26 miles.

The past year was the tenth of the existence of the new tariff regulations, published March 8-20, 1889, reducing the passenger rates. The general passenger tariff, introduced at the end of 1894, lowered the prices for distances exceeding 106 miles; for shorter distances for third-class passengers the tariff remained unchanged. Later, suburban rates were adopted for distances of less than 106 miles, calculated at 1 copeck per mile per third-class passenger. The results of the general lowering of the tariff and the application of the suburban rates proved satisfactory; the number of passengers increased to such an extent that the railroads lost nothing. In view of these favorable conditions, the tariff committee has decided to reduce the rates of all passenger tickets to correspond with those charged on the suburban lines.

The passenger department is working on a new rate sheet, which will be published at an early date. A further reduction has been made to emigrants, who have been carried at a reduced rate when traveling together, one ticket being issued to the whole party, which caused great inconvenience to the emigrants and railroad officials. Hereafter, each emigrant will be furnished with a ticket at one-fourth of the ordinary rate. A new tariff has been worked out for direct communication with the ports of the far east, and this decides an important question concerning Russian commercial relations with distant ports. With the introduction of the new tariff, it becomes possible to transport goods to the ports of the far east from every railroad station of the interior of Russia. A new tariff for transporting Egyptian cotton to Lodz has been made out in connection with the Austrian railroads. Egyptian cotton was formerly billed to the Lodz district through Odessa, and the Russian steamship companies and Russian railroads profited by this traffic. The Austrians coveted this freight, their railroads made a secret agreement with the steamship companies, reducing their tariff, and Egyptian cotton began to move through the Black Sea to Lodz. Under such conditions Russian steamers and Russian railroads lost business, and as the Austrian railroads could do the same thing with other goods coming to Russia from the ports of Asia Minor, the Russian Government increased the tariff on cotton on the

Warsaw-Vienna Railroad, and lowered the rate on the Russian steamship company and the tariff on the Odessa-Lodz railroad. These measures had the desired results—Austrian railroads came to terms with the Russian roads, and a tariff was established satisfactory to both countries. During the past year an agreement was made with foreign railroads concerning tariffs for kerosene and grain cargo coming from stations of the Russian railroads direct to the interior stations of German and Netherland roads. The interior tariff on sugar and salt and the general cargo tariff have also been reviewed this year. It is proposed to establish one general tariff for all the interior railroads, but this will not be done until next year. Owing to the failure of crops this year in some of the governments, a special tariff was established for the transportation of seed grain and cattle to the famished districts.

Last year a project for reorganizing the ministry of ways and communications was presented to the Government for consideration, and is nearing its solution.

W. R. HOLLOWAY,
Consul-General.

ST. PETERSBURG, April 20, 1899.

COST OF SIBERIAN RAILWAY.

The following, bearing date of April 29, 1898, has been received from Consul Smith, of Moscow:

The committee of the Siberian Railway recently held a meeting and rendered its accounts, which contained the following data of expenditures incurred from 1893 to 1897, showing the total cost of the construction of the great Siberian Railway:

Description.	Cost.	
	Rubles.	United States equivalent.
Construction of the Western Siberian Railway, without the Baikal branch.	50,743,111	\$25,371,535
Central Siberian Railway	97,766,591	48,888,285
Branch line of Ekaterinburg-Cheliabinsk	6,535,258	3,267,629
South Ouroussisk branch	22,416,284	11,208,142
North Ouroussisk branch	22,461,130	11,230,565
Irkutsk-Baikal branch	2,405,914	1,202,957
Steam ferry across the Lake Baikal	3,404,171	1,702,085
Zabaikalski Railway	72,447,186	36,223,593
Tomsk branch	2,609,765	1,304,882
Onon branch to the Chinese frontier	32,727,000	16,363,500
Nicolskoi branch to the Chinese frontier	8,811,120	4,405,560
Perm-Cotlaas branch	36,513,886	18,256,943
Various supplementary expenditures.	21,167,865	10,588,932
Total expenditure	371,009,947	188,014,338

Out of the above amount there has been already advanced 325,991,320 rubles (\$162,995,660). Besides this there have been expended for topographical and astronomical works, irrigation, surveying, geological researches, agricultural implements, etc., the sum of 11,957,327 rubles (\$5,978,663.50).

TRAFFIC ON SIBERIAN RAILWAY.

Consul-General Holloway sends from St. Petersburg, April 7, 1899, an extract from a Russian paper, giving the following figures of traffic in the last three years:

Year.	Passengers.		Goods.	
	Western section.	Central section.	Western section.	Central section.
1896.....	160,000	15,000	<i>Pounds.</i> 379,178,000	36,581,000
1897.....	236,000	177,000	765,213,000	194,752,000
1898.....	350,000	300,000	1,083,360,000	393,232,000

The article continues:

These figures do not include 400,000 emigrants carried by the western section with their goods and chattels.

The increase of the traffic on the eastern and still more on the western section of the Siberian railway has surpassed all expectation. Its construction was originally planned on economical lines, but the pessimist forecasts of little or no movement for some years to come are being falsified by the facts. Consequently, the light rails, which are only 18 pounds, instead of 24 pounds, to the foot, will have to be changed. Everything was calculated for not more than three pairs of trains per twenty-four hours, whereas there are already eight pairs, besides the biweekly express from Moscow to Krasnovodsk. Last winter, although 600 new trucks were added and 1,600 old ones borrowed, there was an accumulation of 7,000 truck loads of goods for which no means of transport could be found.

Of the 490,000 tons carried by the western section in 1898, 320,000 tons represent cereals. The steppe regions bordering on the western section five years ago required 100,000 tons of grain per annum; now, they are able to export 70,000 tons. With the opening of the through traffic to the Pacific, the extension of the road as a carrying agent must be enormous. It is calculated that five years hence the Trans-Siberian Railway will have a goods traffic of 1,700,000 tons per annum.

It is proposed to spend over \$40,000,000 in developing traffic during the next few years.¹ Heavier rails and side tracks are to be laid and 1,429 bridges reconstructed. The average speed of trains is now 20 versts (13.26 miles) an hour for passenger, and 12 versts (7.956 miles) an hour for goods traffic. When the reorganization is complete, it will be possible to run trains at 50 versts (33.15 miles) an hour, which would enable them to travel from Moscow to Vladivostok in ten days. The distance separating the Atlantic from the Pacific could then be traveled in considerably less than a fortnight.

On November 1, 1898, Mr. Holloway said:

The Trans-Siberian Railroad will be about 3,644 miles in length when completed; 2,015 miles are completed from St. Petersburg side and 478 miles from the Pacific coast, or Vladivostock end, leaving 1,151 miles yet to be built. The construction is going on at the rate of 331 miles per year.

¹ Consul Halstead, of Birmingham, in a report dated April 5, 1899, quotes from the London Times the following details as to the proposed credit: "The disbursement of this large sum is divided so that 8,750,000 rubles shall be used during three years for various needs of traffic, 43,000,000 rubles during nine years for increasing the speed of trains, and 31,000,000 rubles during four years for new rails, making the aggregate amount allotted for this purpose in the current year 16,500,000 rubles (\$8,497,500). This large sum is in addition to 30,500,000 rubles (\$15,707,500) for the Siberian Railroad and 71,000,000 rubles (\$36,565,000) for other lines in this year's estimates."

THROUGH EXPRESS TRAINS TO SIBERIA.

Consul Smith writes from Moscow, March 15, 1898:

It is decided by the authorities to have an express service between St. Petersburg and the farthest extremity of the Siberian Railway which is finished. A train will be dispatched twice a month and will make the entire run in six days. The train will consist of one dining car, with library, passenger, and sleeping coaches. It will have all modern conveniences. The service will commence in the month of May.

NAVIGABLE WATERWAYS.

According to the Statesman's Handbook for Russia (St. Petersburg, 1898), the total length of navigable waterways in European Russia (exclusive of Finland) is 46,500 English miles. No complete figures are available for Siberia, but many of the great rivers are navigable for thousands of miles. In the basin of the Obi, navigation is regularly maintained over a course of over 9,660 miles; in the Yenisei and Angara, about 3,200 miles are navigable; in the Lena, some 2,800 miles; and the Amoor and its tributaries have about 4,600 navigable miles of waterway.

Russia has also artificial systems of waterways uniting the basins of the Baltic and Caspian and Baltic and White seas. The Obi-Yenisei system has likewise been completed in Siberia, opening a water route of over 3,000 miles.

The number of river craft engaged in domestic transportation amounted in 1896 to some 20,000, made up of 2,500 steamers with a tonnage of 211,000, and 17,000 other vessels with a tonnage of 8,600,000 tons.

A recent issue of the London Times quotes from the *Novoe Vremya* an account of three projected undertakings in the South of Russia—The excavation of a sea canal between Kherson, at the mouth of the Dnieper, and Odessa, the deepening of the port of Taganrog, in the Sea of Azoff; and the deepening also of the Kilia branch of the Danube. The study of all these questions, says the article, which were first raised five or six years ago, has only now been completed with the degree of attention demanded by the importance of the proposed work.

The first project is already meeting with energetic protest from Odessa, the trade of which is considered to be threatened by the proposed Kherson Canal. On the other hand, the zemstvos of the entire Dnieper region are petitioning in favor of the canal; and on all grain to be carried through it they propose to levy a tax of two copecks per peod of 36 pounds.

The minister of ways of communication is also about to preside over a special inter-ministerial commission, assisted by representatives of the mercantile community, to discuss and devise means for satisfying the demands of shipping at St. Petersburg port and Kronstadt.

BALTIC-BLACK SEA CANAL.

Consul-General Holloway writes from St. Petersburg, November 24, 1898:

During the fall of 1897, the Paris edition of the New York Herald published a statement illustrated with a map showing plans for a ship canal to connect the Baltic Sea with the Black Sea, the least width of which was to be 213 feet at water level and 114 feet at the bottom, so that the largest battle ship could pass through it at a reasonable speed.

This article was reproduced in many leading American newspapers, and I received a large number of letters from engineers, newspapers, contractors, and manufacturers of excavating machinery, asking for specifications, cost of labor, details as to contracts, etc. I called on Prince Hilkoﬀ, minister of ways and communications, handed him a newspaper containing the account, and asked if there was any foundation for the statements contained in the article. He was amused and said:

"Some time since a French engineer called on me with the map from which this is copied, as well as an estimate of the cost of building the same. I asked where he procured the data his estimates were based upon. He said: 'From Russian maps.' I then informed him that there were no correct maps of that portion of Russia and his canal was 900 miles short."

The Prince added that the Russian Government had no idea of building such a canal; indeed, he doubted if there was sufficient money in Russia to do so. There had been discussions in the past as to the propriety of building a canal connecting the Black and Baltic seas large enough to enable gunboats to pass through but its cost prevented its serious consideration.

TELEGRAPHS.

Consul-General Holloway, under date of St. Petersburg, October 14, 1898, writes:

On January 1, 1898, the length of the Government telegraph lines in the Russian Empire (besides those belonging to railway lines) was 83,862 miles, and of telegraph cables, 175,395 miles. There were, on January 1, 1898, 3,721 miles of telephone lines and 30,974 miles of telephone cables.

During the current year 2,756 miles of Government telegraph lines and 9,917 telegraph cables are being constructed; also, 1,988 miles of telephone cables, of which 1,590 miles are between St. Petersburg and Moscow, that being the longest line in Russia.

DIRECT STEAMSHIP COMMUNICATION WITH RUSSIA.

Ambassador Hitchcock sends from St. Petersburg, under date of October 10, 1898, copy of a letter from Consul Bornholdt, of Riga, which states that the United Steamship Company, of Copenhagen, which possesses a large fleet of steamers, is about to establish a line direct between Russia and the United States. The boats will make the experiment of running between St. Petersburg, Riga, and New York. The advantage to the importers in the United States of this direct line, adds the consul, will be in cheaper freights and avoidance of transshipment.

A previous report (dated March 1, 1898), from Mr. Hitchcock says that the United Steamship Company has been in existence some thirty years, has a capital of about \$12,000,000, and owns over one hundred and twenty steamers trading between various European ports. It is estimated, he adds, that Russia alone consumes 1,000,000 bales of cotton annually, of which a comparatively small proportion comes direct from America; but this proportion could be immensely increased by avoiding the delay and expense of transshipment at Liverpool, Hamburg, or Bremen. The same is true in respect to the products of American manufactories, for which there is an increasing demand from Russia.

The agent of the line, Mr. Schack, says that it is the intention of the managers of the new line to replace the vessels now in use by six new ships, of which they themselves will build three. They hope to find American capital for the others.

The new line will take freights on through bills of lading from all places in Russia to the United States, and vice versa.

NEW PACIFIC STEAMSHIP LINES.

Consul-General Holloway writes under date of St. Petersburg, November, 1, 1898:

A contributor to a Russian magazine has published an article setting forth the necessity of organizing a Russian steamship line on the Pacific Ocean, in order to establish communication between Siberia and the United States, to connect with the Siberian Railroad. The same author goes on to say:

"Foreigners have already established three new steamship lines, having Vladivostok as a terminal point. One of these—the American-Japanese—has for its western terminus San Diego, the most southern port of California, and will work in connection with the Atchison, Topeka and Santa Fe Railroad. The steamers will also call at Honolulu. The second—the English-Canadian—will work in connection with the Canadian Pacific Railroad Company, and sail from the cities of Vancouver and Victoria; two of its large steamers, about 5,000 tons each, will run regularly from these cities to Hakodadi and Vladivostok. This line is controlled by the Canadian Railroad and the Empress Line. The reason for its establishment is said to be the rapid development of the Russian Pacific coast and the Siberian Railroad, and the demand for American products, among others, wheat flour, timber, and materials for railroads and factories. The third line belongs to the North German Lloyd of the Bremen Steamship Company. It has not yet selected its terminus; its directors are hesitating between San Francisco and Los Angeles.

"The longer Russia remains inactive in this direction the smaller are her prospects of occupying the place which is due her in the transcontinental and oceanic traffic. This inactivity will greatly influence the future well-being of the great Siberian Railroad."

Passengers and mails can reach Vladivostok via the Vancouver route in thirty days from St. Petersburg, while it requires thirty-five days via the trans-Siberian route, 1,151 miles of which is made in partially closed conveyances on rough roads, traveling night and day. By the usually traveled route, the trip requires forty-five days.

SPAIN.

CADIZ.

The following extracts are taken from the annual report of Vice-Consul Haynes, which appeared in Commercial Relations for 1896-97:

STEAMSHIP LINES CALLING AT CADIZ.

There are no regular lines to the United States. Mail steamers leave for Cuba and the Philippines twice per month. Two English lines call here weekly, touching the Spanish and Portuguese coast. They take on an average ten days from London. The Spanish coasting service is good, steamers calling at Cadiz four or five times per week, going east and west.

Large numbers of sailing vessels of all nationalities call here in ballast and load salt outward, principally for Newfoundland and South America.

NAMES OF STEAMSHIP LINES.

Pinillos, Izquierdo & Cia (Spanish), for Canaries, Porto Rico, Cuba, and the Philippines.

Compañía Transatlantica (Spanish), for the West Indies, Vera Cruz, Montevideo, Buenos Ayres, Morocco, Port Said, Aden, Colombo, Singapore, and the Philippines.

Compañía Transatlantica de F. Prats, of Barcelona, for Porto Rico, Cuba, Canary Islands, and South America, calling at United States ports should sufficient inducement offer.

Compañía Ybarra, Espallu y Cia, and Compañía Sevillana, all Spanish, for Huelva, Vigo, Corunna, Bilbao, Almeria, Cartagena, Alicante, Malaga, Valencia, Barcelona, Marseilles, Genoa, Leghorn.

T. H. Line (sons of Thomas Haynes), for Gibraltar, Malaga, Oran, Algiers, Ceuta, Tangiers, Larache, Rabat, Casablanca, Mazagan, Saffi, Mogador, and the Canary Islands. This firm possesses salvage steamers and plant, stationed at Gibraltar, Cadiz, and Huelva.

Knot's Prince Line (English), for Montevideo, Buenos Ayres, and Central America.

Mac Andrew's line of steamers (English), for Lisbon, Liverpool, London, Dunkirk, and Antwerp.

Correos Maritimos de Canarias (Spanish), to and from the Canary Islands.

Société Générale Trasportes Maritimes, for Genoa, Marseilles, La Plata, Madeira, Rio Janeiro, and Santos.

RAILWAYS.

By the new railway connecting Algeciras with Bobadilla, the journey between Gibraltar and London can be performed in fifty-four hours. Pullman cars are in use on this line.

CORUNNA.

Consul Harmony writes from Corunna, September 16, 1897:

Freight rates are as follows:

To Rio Janeiro: Tinned provisions, 50 pesetas (\$6.50) and 10 per cent primage per 100 kilograms (2,200 pounds.); wine or sardines in barrels, 60 pesetas (\$7.80) and 10 per cent primage per 1,000 kilograms; wine in hogsheads, 65 pesetas (\$8.45) and 10 per cent primage per 1,000 kilograms.

o Bahia: Fifteen pesetas (\$1.95) dearer than the foregoing

To Maranhao: Wine, 60 shillings (\$14.58) per 1,000 kilograms; general, 40 shillings (\$9.72) per 1,000 kilograms or 40 cubic feet.

To Buenos Ayres and Montevideo: General, 45 pesetas (\$5.85) and 10 per cent primage per 1,000 kilograms.

To Antwerp, Hamburg, London: General, 20 shillings (\$4.86) per ton (1,015 kilograms).

To Bordeaux: General, 21 francs (\$4.053) per 1,000 kilograms.

To Bayonne: General, 25 francs (\$4.825) and 10 per cent primage per 1,000 kilograms.

To Porto Rico, all ports: General, 50 pesetas (\$6.50) per 1,000 kilograms.

To Cuba, Havana: General, 40 pesetas (\$5.20) per 1,000 kilograms; the other ports, general, 45 pesetas (\$5.85) per 1,000 kilograms; Havana, onions, potatoes, beans, etc., 45 pesetas (\$5.85) per 1,000 kilograms; the other ports, 50 pesetas (\$6.50) per 1,000 kilograms.

To Valparaiso: Packed sardines, 60 pesetas (\$7.80) and 5 per cent primage per 1,000 kilograms.

TRANSPORTATION.

Internal.—Besides the Northwestern Railway, which facilitates communication with the heart of the country, other lines are: Monforth-Orense-Tuy, 150 kilometers (94 miles); Tuy-Vigo-Pontevedra, 70 kilometers (44 miles); Carril-Santiago, 45 kilometers (28 miles). In construction: Carril-Pontevedra, 35 kilometers (22 miles); Ferrol-Betanzos, 50 kilometers (31 miles). Projected: Coruña-Santiago, 175 kilometers (109 miles).

Coastwise.—Several lines of steamers run along the Spanish coast, from Barcelona to Pasages (Biscay), and often extend their trade to the French coasts.

Ocean.—First-class English, French, German, Dutch, and Spanish trans-Atlantic liners touch at Corunna regularly.

MALAGA.

STEAMSHIP LINES.

There are several steamship lines touching at Malaga, the Government paying some an annual subsidy for carrying the mails. A list of all lines, national and foreign, which sail from this port to foreign countries is appended.

Steamship lines departing from Malaga, Spain, for foreign countries.

Line.	Where bound.		Sailings.	Remarks.
	Country.	Port.		
Anchor Line Steamship Co. (English) City Line (English)	United States Great Britain	New York Liverpool Dublin Glasgow Palermo Genoa	Irregular Bimonthly	During the vintage. Via Cadiz.
Cyprien Fabre Ca. (French)	United States Italy	New York Palermo Genoa	Irregular	Trimonthly and via Cadiz, during the vintage.
Compagnie Générale Transatlantique (French)	France Martinique Trinidad Venezuela	Marseille Fort of France Port of Spain Carupano La Guayra Porto Cabello	Monthly	Mail steamers.
Compañía Transatlántica Española (Spanish)	Curaçao Colombia Morocco Canaries Porto Rico Cuba	Cartagena Savanilla Colon Tangiers Teneriffe Ponce Havana Santiago de Cuba Vers Cruz	do	Do.
Compañía Transatlántica Española (Spanish)	Mexico Colombia Brazil Argentina Republic	Colon Rio de Janeiro Montevideo Buenos Ayres	Every 2 months	Do.
Compañía Sevillana de Navegacion (Spanish)	Philippine Islands Africa France	Manila Fernando Po Marseille Cette	Every 3 months Weekly	Via Spanish coast ports.
Compañía Valenciana de Navegacion (Spanish)	do	Marseille Cette	Trimonthly	Via Barcelona.
Compagnie Havraise Péniinsulaire, formerly E. Gross & Co. (French)	Italy France Belgium	Leghorn Genoa St. Nazaire Bordeaux Havre Antwerp	do	Do.

Steamship lines departing from Malaga, Spain, for foreign countries—Continued.

Line.	Where bound.		Sailings.	Remarks.
	Country.	Port.		
Det Forenede Dampskibs Selskab Ca. (Danish).	Denmark Germany	Copenhagen Stockholm Königsberg	Irregular	For cargo only. Tri-monthly during vintage.
	Russia.	Riga Livon Lithuan.		
Españu y Ca. (Spanish)	France.	St. Petersburg Marseille	Weekly	Via Spanish ports.
F. Prat y Ca. (Spanish)	Canary Islands Porto Rico.	Ceuta Teneriffe Ponce.	Monthly	Via Cadiz.
	Cuba	Mayaguez Cienfuegos Matanzas		
Goodyear & Co. (English)	United States. Great Britain.	Santiago de Cuba New Orleans Liverpool Glasgow London	Weekly	During vintage.
	United States.	New York Hull	Bimonthly	
Haynes Line (English)	Morocco	Gibraltar Tangier Mellilla	Every 20 days	Do. Do. Via Vigo. Via Cadiz.
	England	Liverpool	Bimonthly	
J. Moses & Co. (English)	Portugal	do	do	Do. Do. Via Vigo. Via Cadiz.
James Adams & Sons (English)	England	Lisbon	Weekly	
John Hall, Jr. & Co. (English)	Porto Rico.	London	Weekly	Do. Do. Via Vigo. Via Cadiz.
J. Jover Serra y Ca. (Spanish)	Cuba	Porto of, for cargo	Monthly	
Knot, Prince Line (English)	United States.	New York	Monthly	During vintage.
	England	Boston	Irregular	
	Venezuela.	Liverpool	Irregular	During vintage.
	Colombia	La Guayra Porto Cabello		
	Costa Rica.	Cartagena	Monthly	During vintage.
	Brazil	Colon		
	Argentine Republic	Porto Limon Rio de Janeiro Santos Montevideo Buenos Aires	Monthly	

Atlantic and New York Steamship Co. (English).	England, United States, England, Great Britain	Rotterdam, Liverpool, New York, Liverpool	Trimonthly, Occasionally, Irregular	{ During vintage. Other months according to cargo. For New York.
MacAndrews & Co. (English)		do		
Philo, Izquierdo y Ca. (Spanish)	Porto Rico, Cuba, Mexico, Egypt, Malay Peninsula, Philippine Islands.	Dublin, Glasgow, Ponce, Havana, Vera Cruz, Port Said, Singapore, Iloilo, Manila, Cebu	Weekly	{ During vintage season. Occasionally at other times.
Papayan & Co. (English), Serra y La Hocha (Spanish), Sloman, Jr., Line (German)	China, Cochín China, England, Italy	Hongkong, Liverpool, do, Genoa, Leghorn, Naples, Messina, Palermo, Hamburg, Rio de Janeiro, Santos, Montevideo, Buenos Ayres, Liverpool	Monthly, Bimonthly, Once or twice per month, Bimonthly	Mail steamers, via Spanish ports. During vintage. Weekly during vintage. Via Barcelona
Société Générale de Transport Maritime (French).	Germany, Brazil, Argentine Republic	do	do	Mail steamers.
Tintore y Ca. (Spanish)	England		Once or twice per month	Weekly during the vintage.

CANALS.

There are two fine canals in the north of Spain, one passing through Aragon, the other through Castilla la Nueva. The first is called Canal of Aragon; the second, Canal de Ysabel Segunda.

R. M. BARTLEMAN,

Consul.

MALAGA, *September 17, 1897.*

Under date of January 1, 1898, Mr. Bartleman says:

The construction of the Linares-Almeria Railway progresses slowly but steadily. Since last year, another section has been opened to the public, and the total length now completed—i. e., from Almeria to Alamedilla—is 146 kilometers (90.72 miles). The remaining section, from Alamedilla to Linares, about 66 kilometers (41 miles), is expected to be finished in the course of next year.

SWEDEN AND NORWAY.

NEW RAILROADS IN SWEDEN.

Consul Boyesen writes under date of Gothenburg, October 12, 1897:

A railroad is planned to be built, with the assistance of the Government, through the province of Bohuslän, from Gothenburg to Svinesund, on the Norwegian frontier. The cost of the road (including rolling stock, but excluding the necessary land) is estimated at 16,216,500 kronor (\$4,346,022). The length is to be from 192,129 to 193,369 meters (119 to 120 miles), and the gauge, or width between the rails, 1.435 meters (4.7 feet).

The bill asking for the concession was presented before the Diet at its last session, but was voted down. It will, however, in an amended form, be laid before the Riksdag again at its next session, and the probabilities are that it will then be more favorably received.

A narrow-gauge railroad is now being built through the province of Vestergötland from Gothenburg to Vara. Width between the rails, 891 millimeters (nearly 3 feet) length, about 150 kilometers (some 93 miles); estimated cost, 4,000,000 to 5,000,000 kronor (\$1,072,000 to \$1,340,000).

Others are: The Malmö-Continent Railway Company, Malmö, Sweden; "Skåne-Smålands Jernvåg," which is nearly finished. A new railroad is also projected to be built from Malmö to Landskrona and Helsingborg, according to report from the United States consular agent at the place last named.

NEW STEAMSHIP LINE.

Under date of July 29, 1898, Consul Bergh, of Gothenburg, writes:

A company in Copenhagen, Denmark, has established a direct steamship communication between Copenhagen-Gothenburg and the ports of Colombo, Penang, Singapore, Shanghai, and Bangkok. Goods destined for Japanese ports are also carried. Swedish exporters will undoubtedly try by this means to extend the markets for their goods in Asia.

OCEAN TRANSPORTATION FACILITIES OF NORWAY

The Norwegian coast being about 1,800 nautical miles in length, and the country up to the present time having few and short railroads, all located in the southern and central part, it will be understood that the main traffic is carried on coastwise. In the northern part, the mail and freight service is in the hands of three steamship companies, supported by the Government. The steamers used for this purpose are from 500 to 800 tons burden, and almost luxuriously fitted with all the latest and modern improvements. They run five times a week between Trondhjem and Vadsö, the last town in the northeast of Norway, not far from the Russian border. Two express steamers, carrying only mail and passengers, are run from Trondhjem to Tromsö, twice a week, calling at several stations. The round trip (about 1,040 nautical miles) takes four and a half days. Besides these there are freight steamers going nearly every day along the coast from Trondhjem and southward, providing a regular freight, mail, and passenger steam service.

Local steamship companies from one end of the country to the other, some of them under subvention of the Government, run small steamers from the principal places on the coast, where the larger steamers call, to the end of the numerous fjords of Norway.

The Government further supports steamers in the undermentioned routes with a view of facilitating commerce:

Trondhjem; Norway, to Hull, England.

Bergen, Norway, to Hull, England.

Vadsö, Norway, along the Norwegian coast to Hamburg, Germany.

Trondhjem and Bergen, Norway, to Spanish and Mediterranean ports.

Two steamship companies, Thingvalla (Copenhagen and Hamburg) and American (Hamburg) run fortnightly steamers between New York and Christiania, the first carrying freight and passengers, the second freight only. The passage from New York to Norway direct generally takes fourteen days, which is three days more than the mail requires between the two countries.

There is reason to believe that if the American steamship companies established a direct freight and passenger line between the United States and Norway and Sweden, it would pay. A fraction of the large amount of money at present paid for the transportation of American goods to foreign countries would then go to American shipowners.

HENRY BORDEWICH,

Consul.

CHRISTIANIA, *October 15, 1897.*

SWITZERLAND.

NEW RAILROADS.

Consular Agent Harris writes from Eibenstock, November 27, 1898:

Switzerland is at present putting forth remarkable efforts in the way of railroad construction. Work has begun on the great Simplon tunnel, and the first stretch of the daringly planned Jungfrau Railroad is completed. The work will also be hurried on the Rhätischen Albulabahn. The most interesting of all, however, is the attempt now being made by an English company to secure a concession to build an electric wire-rope railway from Aosta, in Italy, over the great St. Bernard to Martigny, in the Rhone Valley. The cost, if undertaken, is estimated at \$2,895,000.

TURKEY IN EUROPE.

RAILWAYS.

The Statesman's Year-Book, 1899, enumerates the following lines of railroad in European and Asiatic Turkey in 1897:

	Miles open.
Constantinople-Adrianople, Moustafa-Bocha.....	222
Salonica-Uskub Mitrovitza.....	227
Dedeagatch-Adrianople.....	92
Uskub-Zibsfche.....	53
Salonica-Constantinople Junction, with branches.....	316
Salonica-Monastir.....	136
Smyrna-Diner, with branches.....	324
Smyrna-Allashehr, with branches.....	284
Moudonia-Broussa.....	26
Mersina-Adana.....	40
Jaffa-Jerusalem.....	54
Haidar-Pacha-Angora.....	360
Beirut-Damascus-Hauran.....	132
Esk-shehr-Konieh.....	276
Total.....	2,542

A report in the Bolletino del Ministero degli Affari Esteri, Rome, October, 1898, says:

Three railway lines have their terminus at Salonica. The Oriental line, the oldest, unites this port by way of Uskub with Servia, Hungary, and Austria. The "Junction" unites it with Constantinople by way of Dedeagatch, and roads run from Salonica to Monastir, which, being altogether more than 600 miles long, should be of immense service in a country essentially agricultural, and one which exports the greater part of its products; but, on account of the high freight rates, due to the Government guaranty, it carries only a limited proportion of them. The Turkish Government grants the road enough to cover the running expenses and a moderate profit, so that the company has no interest in lowering the tariff. Districts not half a dozen miles from the road still transport their products to Salonica by beasts of burden and in wagons.

UNITED STATES-TURKISH STEAMSHIP SERVICE.

In my report¹ on the commerce and industries of Turkey I endeavored to convince the business men of the United States that a direct steamship line was indispensable to the growth of American commerce in Turkey, and that by combining orders such a line would have all the freight it could carry.

After long negotiation with many steamship companies, Messrs. Barber & Co., of New York, have been induced to start a direct line. The first steamer—the *Athalie*—has come with 15,000 bags of American flour and gone with a good share of Constantinople, Smyrna, and Grecian freight. The *Britannic* and *Cape Comorin*, of this line, are already on their way, loaded with American machinery, oil, and other goods. The *Stalheim* will sail for this port the last of February.

If American exporters will give this new line their business for Mediterranean ports, it will soon be a permanent success and open excellent markets for American goods in Turkey, Bulgaria, Roumania, and southern Russia. The new line will need American patronage, for the Cunard and three other companies carrying freight to the United States by transshipment at Liverpool have already combined, and orders have come from Liverpool to make any cut in rates that may be necessary “to kill the Yankee line.”

The opinion here is unanimous that if direct communication can be maintained, American merchants and manufacturers will soon have a substantial share of the business of this region.

CHAS. M. DICKINSON,
Consul-General.

CONSTANTINOPLE, *February 15, 1899.*

UNITED KINGDOM.**FALMOUTH RAILWAY AND STEAMBOAT SERVICE.**

Consul Fox writes from Falmouth, October 9, 1897: .

Falmouth is in direct communication with the railway systems of Great Britain, and there is a good service of trains to and from London and the north of England, etc., the journey between London and Falmouth being accomplished in less than eight hours.

Steamers from Dublin to London, and from Liverpool to London, and vice versa, call here regularly three times a week each way. There is no direct communication from this county to America, passengers having to go to Liverpool, Southampton, etc., for embarkation.

¹ See Commercial Relations, 1898, Vol. II.

NEW LONDON-MIDLANDS RAILWAY.

In his annual report for 1898, Consul-General Osborne writes:

A new railway running into London from the midlands has been opened to traffic. This is the Great Central Railway, which, as its name implies, will form, when fully opened, another and a more direct link between the midland towns and the metropolis.

STEAMSHIP LINE FROM ENGLAND TO FINLAND.

Consul Metcalf, of Newcastle-on-Tyne, under date of May 19, 1899, reports the recent establishment of a weekly line of steamers from that port to Finland, carrying passengers, mails, and freight. One steamer has already arrived at Newcastle with above 200 emigrants on board, en route for the United States.

RECENT TRAFFIC ON MANCHESTER CANAL.

Consul Hill sends the following from Amsterdam, October 16, 1899:

The report of the Manchester Ship Canal shows that in 1898, 2,595,585 tons passed through, against 925,659 tons in the year of opening (1894). The last half year's gross revenue reached \$647,650; expenses, \$458,025; balance, \$189,625. Add to this \$113,700 profit from the Bridgewater Canal system, absorbed by the Manchester Canal, devoted to paying interest on mortgages and interest to the city of Manchester. This does not give a very large dividend to those who hold shares issued to cover the \$78,000,000 of the cost of construction. The returns for the nine months ending September 30, 1899, show traffic returns as amounting to £192,670 (\$937,000), against £170,000 (\$827,000) for same period of 1898.

NEW SHIPPING FACILITIES AT LIVERPOOL.

Consul Boyle, of Liverpool, under date of October 13, 1899, writes:

The following is a list of new ships that have commenced running this year, or have been recently launched, or are being constructed for service between this port and ports of the United States:

Cunard Line.—The *Ivernia*, gross tonnage, 13,900; a sister ship, the *Saronia*, is now on the ways; both are for the Boston trade; passengers and cargo.

Dominion Line.—The *Englishman*, gross tonnage, 6,335; the *Turcoman*, gross tonnage, 5,600; both old vessels, but altered to meet the requirements of the American cargo trade. The *Derbyshire*, gross tonnage, 6,635, has also been engaged for the Boston trade for both passengers and cargo. This line has now building the *Commonwealth* for the passenger and cargo Boston service. The *Commonwealth* will be larger than the *New England*.

Harrison New Orleans Line.—The *Politician*, net tonnage, 4,737; the *Collegian*, net tonnage, 4,691; both cargo only.

Johnson Baltimore Line.—The *Ismore*, gross tonnage 6,214, cargo only; the *Beachmore*, gross tonnage 3,313, cargo only; the *Maplemore*, gross tonnage 7,719, cargo only; the *Gorsemore*, gross tonnage 3,078, cargo only; the *Noranmore*, gross tonnage 6,648, cargo only.

Leyland Boston Line.—The *Winifredian*, gross tonnage, 10,404; passengers and cargo; a sister ship is now building.

West India and Pacific Steamship Company.—The *Atlantian*, gross tonnage, 9,354; for the New Orleans cotton trade and a limited number of passengers.

White Star Line.—The *Oceanic*, gross tonnage, 17,040; passengers and cargo.

PLYMOUTH TRANSPORTATION FACILITIES.

The intermediate steamers of the Castle Line continue to call at Plymouth, but the port must suffer considerably from the fact that the mail steamers of the Castle Line and those of the Hamburg-American Company and the North German Lloyd no longer use Plymouth as a port of call. From 1874 until early this year, the Donald Currie mail steamers called at this port, and the importance of the line to Plymouth is obvious when it is remembered that an average of 200 passengers were brought here by these steamers every fortnight. The steamers of the Hamburg-American Line have not called at Plymouth during the last year; and since the middle of May, when the *Kaiser Wilhelm der Grosse* made her last call, the vessels of the North German Lloyd have made Southampton their port of call. The Royal Mail Steam Packet Company, whose steamers carry fortnightly mails from the West Indies, is the only company bringing regular mails to this port; but the Orient Line steamers, calling at Plymouth, deal with as many as 4,000 passengers in a year, while the vessels of the Peninsular and Oriental and British India Steam Navigation companies also land a large number of passengers, and the boats of the Shaw, Saville and Albion Company and the New Zealand Steamship Company, in their monthly service to New Zealand via the Cape, call both homeward and outward and carry a number of Cornish miners between the Cape and this port.

JOS. G. STEPHENS,

PLYMOUTH, *January 25, 1899.*

Consul.

COMMUNICATION WITH SOUTHAMPTON.

The direct sailings from this port are:

American Line.—To New York, weekly.

Royal Mail Steam Packet Company.—To Portugal, Brazil, and South America, fortnightly; to Cape de Verde Islands, monthly; North and South Pacific, Central America, and West Indies, fortnightly.

Union Steamship Company.—Madeira, Canaries, Cape, southeast African ports, weekly; one steamer stops at St. Helena monthly.

Castle Line (Donald Currie) Packet Company.—Madeira, Canaries, Cape, southeast African ports, weekly; one steamer touches at St. Helena monthly.

North German Lloyd.—New York, weekly; Mediterranean, China, Japan, Australia, and South America, monthly.

Hamburg-American.—New York, fortnightly.

Rotterdam Lloyd.—Dutch East Indies, weekly.

Nederland Steamship Company.—Dutch East Indies, weekly.

United Steamship Company.—Copenhagen and Baltic ports and Mediterranean ports, frequent intervals.

London and Southwestern Railroad Company.—Channel Islands and Havre, daily except Sunday; St. Malo and Cherbourg, triweekly.

There is an extensive coasting trade with New Haven, Dover, Plymouth, Falmouth, Liverpool, London, Manchester, Glasgow, Greenock, Cork, Waterford, Dublin, and Belfast; also a ferry to the Isle of Wight.

In this connection, I would state that the agent of the Royal Mail Steam Packet Company called at this consulate on October 12 for information as to vessels sailing to Ponce. The vessels carry no immigrants, but carry freight and about 15 third-class passengers. The Royal Mail will shortly touch Ponce, and is also contemplating touching Cuban ports.

RAILROADS.

The only railroad entering this city is the London and Southwestern, with extensive branches reaching over the principal parts of southern England. During the past year, this corporation has built an important extension from Holsworthy to Bude, giving an outlet on the Atlantic Ocean, in the county of Cornwall, between Lands End and Wales. The company now has in operation 953 miles of road, against 941 last year.

A project is on foot for the construction of a road from Andoversford, a station on the line of the London and Southwestern Railway, to Stratford-upon-Avon, there to connect with a new line to Birmingham, thus giving this port a direct line to Birmingham.

JOHN E. HOPLEY,

Consul.

SOUTHAMPTON, *October 31, 1898.*

SWANSEA TRANSPORTATION FACILITIES.

Consul Prees writes, under date of October 13, 1897:

The existing condition of transportation facilities in this consular district is very satisfactory. There are five railroads here. The coastwise transportation is excellent, and there are regular sailings between here and London, Liverpool, Manchester, Bristol, Glasgow, Dublin, and all the other important seaports of the United Kingdom. There are regular lines of steamers going from here to all navigable parts of the world. The communication with United States is good, and there are constant sailings between here and New York, Philadelphia, Baltimore, Boston, San Francisco, and occasional sailings for Charleston, Fernandina, Norfolk, Galveston, Darien, San Diego, etc. The time of communication varies from ten to fourteen days (except, of course, in the case of sailers going to San Francisco, which vary from one hundred to one hundred and twenty days). The freight rates from here are the same as they have been for the past few years, viz, from 9s. to 30s. (\$2.18-\$7.29 per ton weight, or 40 cubic feet measurement).

BELFAST TRANSPORTATION FACILITIES.

Transportation facilities in and from this district are very creditable, and seem to be fully adequate to the trade both by rail and sea.

Five lines of railway terminate in Belfast, the principal one of which is the Great Northern. The company has its main line to Dublin, several branches running to the north and Londonderry, and to the west and Sligo. In fact, the whole of Ulster is well provided with railways.

Twelve lines of steamers run daily from Belfast to cross-channel ports. The principal are those to Liverpool, Fleetwood, Glasgow, Barrow, and London.

The average yearly tonnage engaged in foreign trade entered into ports of Ireland from 1887 to 1896 was 972,105 tons.

WILLIAM W. TOUVELLE,

Consul.

BELFAST, *October 24, 1898.*

NORTH AMERICA.

DOMINION OF CANADA.

BRITISH COLUMBIA.

VANCOUVER RAILWAY AND STEAMSHIP COMMUNICATION.

In his report appearing in Commercial Relations, 1896-97, Commercial Agent Peterson says:

The railroad lines of the district are the Canadian Pacific Railway Company, with its branches to New Westminster from Westminster Junction, from Mission Junction to Huntingdon Junction, connecting with the American railway system to Vernon from Sicamous, from Revelstoke to Arrowhead, forming the first of a series of steamboat and railroad connection in the mining district of Kootenai, being steamer from Arrowhead to Nakusp, and the Nakusp and Slocan Railway to the Slocan mines at Sandon; from Sandon to Raslo by Raslo and Slocan Railway; boats run from Raslo to Nelson, from Nakusp to Robson and Trail, where connections can be made by railroad to Nelson or Roseland. The Nelson and Fort Shepherd Railway runs from Nelson to Spokane, connecting with the American system. The Kootenai district can also be reached by the Great Northern Railway Company at New Westminster to Spokane, Wash., and then north by the Nelson and Fort Shepherd. A good stage road runs from Ascroft north into the Cariboo mining district and from Golden south to Fort Steele, into the east Kootenai district. A daily service exists between this city and Victoria and Nanaimo, on Vancouver Island. The steamer *Comox* makes weekly trips up the coast to mining and lumber camps; the steamer *Utopia* makes semiweekly trips to Puget Sound cities.

The Canadian Pacific Steamship Company has three steamships running from this port to Hongkong, touching at different Japanese and Chinese ports.

The Canadian-Australian Steamship Company has two steamships sailing from here to Australia, calling at Honolulu and the Fiji Islands.

The Pacific Coast Steamship Company has three steamers plying coastwise from San Francisco, calling at all principal Puget Sound and British Columbia ports.

The means of communicating with the United States from this point are the Canadian Pacific Railway Company to eastern points, connecting at the different border ports with the American system of railroads; or to Sumas, 50 miles from here; or by the Great Northern Railway from New Westminster, crossing the border at Blaine, Wash.; or the Pacific Coast Steamship Company's regular line of steamships to San Francisco; or steamer to Puget Sound points.

The freight rates from here to the United States are similar to those on the other side of the line. The American and Canadian roads compete for business on both sides of the line, thus keeping the rates uniform.

In November, 1897, Consul Dudley writes:

During the last year, very many important steps have been taken in providing increased transportation facilities for different points in the Province. The opening

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of the Slocan extension of the Canadian Pacific Railway gives an opportunity for the shipment of ore from a region that was almost barred from making shipments before. The most important development of transportation facilities is the Crows Nest Pass Branch of the Canadian Pacific Railway, which leaves the main line on the eastern side of the Rocky Mountains, and, pushing through the difficult canyons and passes, will enter the mining region in the southeastern portion of British Columbia, thereby affording an opportunity for direct shipment to eastern points over that line. A party of officials of the Canadian Pacific Railway, with surveyors, has just returned from a tour of investigation up the Stickeen River route to the gold fields in the valley of the Yukon. It is understood here that a road will be built from the valley of the Stickeen River to Teslin Lake, and that the Canadian Pacific Railway will put on a line of steamships from Vancouver to the starting point of the railway. This will give a route entirely within Canadian territory to the gold field in the British Northwest Territory. There is another railway projected, and many people here are of opinion that its construction will be commenced at an early day. It is proposed to construct a line from the mineral district in the southeastern portion of the Province, from Nelson, Rossland, or some other point, directly through the southern portion of the Province to some point on tide water south and west of Vancouver.

STEAMSHIP RATES TO ALASKA.

Consul Dudley adds, in January, 1899:

At a meeting of the representatives of the various coast shipping firms, in the Pacific Coast Steamship Company's office in Seattle, the following schedule of charges for steamers operating with the Alaskan ports was fixed. The rates from his port will probably not vary very greatly from those given in the following statement:

For passengers, first and second class:

To Wrangell and points south.....	\$17	\$10
To Juneau	20	12
To Skagway and Dyea	25	15
Wrangell to Skagway.....	10	

General merchandise, per ton:

To Wrangell	\$8.00
To Juneau	9.00
To Skagway and Dyea	10.00

Horses and cattle, in lots of less than three, to all Alaskan points, \$22.50 a head; in lots of more than three, \$20 a head; dogs, to all points, \$5.

Dressed meat:

To Skagway and Dyea	\$25.00
To Juneau	22.50
To Wrangell.....	20.00

Live hogs:

To Skagway and Dyea	40.00
To Juneau.....	36.00
To Wrangell.....	32.00

Wool, merchandise rate, estimated at 500 pounds each:

To Skagway and Dyea	2.50
To Juneau.....	2.25
To Wrangell.....	2.00

Timber, per thousand feet:

To Skagway and Dyea	9.50
To Juneau.....	8.50
To Wrangell.....	7.50

Hay, per ton:

To Skagway and Dyea.....	\$15.00
To Juneau.....	14.00
To Wrangell.....	12.00

CANADIAN-AUSTRALIAN CABLE.

Under date of April 15, 1899, Consul Dudley writes from Vancouver in regard to the cable that is to be laid from that city to Fanning Island and thence to Australia and New Zealand. The capital stock of the enterprise, he says, has been divided into eighteen parts. Of this, it is said that the colonies of Australia and New Zealand will take eight-eighteenths, and the Governments of Great Britain and the Dominion of Canada five-eighteenths each. The work of laying the cable will begin this summer.

MANITOBA.

Consul Graham, of Winnipeg, on November 9, 1898, writes:

The transportation facilities of the district have been much improved of late years, and are now quite satisfactory. There are five lines of railroad connecting the district with the United States, and another is now being built, running southeast from Winnipeg into the State of Minnesota, passing around the south end of the Lake of the Woods in the direction of Duluth, which city is its objective point.

The city of Winnipeg is a railroad center, there being no less than ten lines radiating from it in all directions. Among these are the Canadian Pacific and the Northern Pacific, each with a number of branch lines. About 250 miles of extensions of these lines have been completed this year, and still more is under contract to be built next year.

NEWFOUNDLAND.

In a report dated November 5, 1898, Consul Carter, of St. Johns, says:

The transportation facilities in Newfoundland are:

Internal.—By railroad to the northern and eastern coasts to Exploits, Brook, and Halls Bay; thence through the interior of the country to Bay of Islands, Georges Bay, and finally to terminus of line on the west coast (in the Gulf of St. Lawrence) to Port au Basque, connecting with steamship *Bruce* for North Sydney, Cape Breton (7 hours sea voyage). At North Sydney, connection is made with the Intercolonial Railway to St. Johns, New Brunswick; Canadian Pacific Railroad to Vanceboro, Me.; Maine Central Railroad to Bangor, Portland, and Boston. The time from St. Johns, Newfoundland, to Boston is 72 hours; trains connect with steamer at Port au Basque for St. Johns three times each week, and run daily between St. Johns and Placentia (86 miles) in Placentia Bay, connecting at Whitbourne for Harbor Grace.

Coastwise.—By steamer to eastern and northern coasts; also by steamer from St. Johns southern and western coasts and Gulf of St. Lawrence to Bouse Bay, both steamers returning to St. Johns semimonthly in summer. They do not ply after the Christmas season, on account of the heavy ice on the coast. A steamer runs between St. Johns and Battle Harbor, Labrador, stopping at all principal places and posts of the Hudson Bay Company and Moravian mission stations on the Labrador coast, making 7 round trips each season, usually commencing about August 1 and ending

about October 20. There is no means of communication with Labrador after steamer stops running, excepting by mail, which is carried across the country from Quebec, Canada, three times each winter, in sleds drawn by dogs.

Ocean (foreign).—To the United States there are two lines of steamers: Red Cross Line from New York via Halifax, Nova Scotia, semimonthly in summer and once a month in winter to St. Johns, Newfoundland. By the Allan Line from Philadelphia to Glasgow via St. Johns, also stopping on the return trip. The service is semimonthly. The time occupied in the voyage between St. Johns, Newfoundland, and the United States is about five to five and one-half days. Dobell and Black Diamond lines of steamers run semimonthly between Montreal and St. Johns during the season. Navigation is open from about the 1st of May to the 1st of November. The Furness Line runs from Halifax to Liverpool, calling at St. Johns each way semimonthly.

New wagon routes opened in 1898 are: Road connecting Port au Par with railway at the mouth of river St. George; distance, 12 miles. There is a road in course of construction from the bottom of White Bay, due south, to connect with the railway; distance, 35 miles.

Freight rates via railway are governed by rates adopted by the Canadian Freight Association. By steamers between St. Johns and Philadelphia, they average \$6 per ton; between St. Johns and New York, \$5 per ton; between St. Johns and Montreal, \$4 per ton; between St. Johns and Liverpool, \$3.80 per ton.

RAILWAY CONTRACT.

The following extracts are from a contract between the government of Newfoundland and Robert G. Reid, of Montreal, as transmitted by Consul Carter, of St. Johns, April 9, 1898:

The Newfoundland Railway, from St. Johns to Harbor Grace; the branch now in course of construction from Brigus Junction to Clarke's Beach, and thence to Tilton; the extension now in course of construction from Harbor Grace to Carbonear; the Placentia branch from Placentia to Placentia Junction; the Newfoundland, Northern and Western Railway, from Whitbourne to Port-au-Basque; the branch now in course of construction from the Burnt Bay, crossing to Burnt Bay in Notre Dame Bay; the new branch or extension into the west end of St. Johns hereinafter provided for, are and shall be held to be combined and comprehended under one system, which shall be called and known as the Newfoundland Railway.

The rates to be charged by the contractor for carrying passengers shall not exceed 3 cents per mile for first-class passengers and 2 cents per mile for second-class passengers for distances more than 25 miles.

The charges for transportation of freight in carload lots shall not exceed 3 cents per ton (of 2,240 pounds) per mile for distances more than 50 miles and not more than 100 miles. The freight on bulky articles may be charged by measurement, and 50 cubic feet shall be estimated as the equivalent of a ton in weight. For lots less than carloads the classification of freight shall be governed by the Canadian Pacific Railway for Ontario and Quebec; provided that the schedule of rates may from time to time be altered or amended by mutual consent.

The contractor shall construct a new line or branch railway between Topsail and St. Johns, terminating at the municipal basin, which the government agrees to grant to the contractor for terminal purposes. The government shall pay to the contractor for said construction at the rate of \$15,600 per mile, but the total amount to be paid shall not exceed the sum of \$100,000. The said new branch is to be completed not later than the 31st of December, 1898.

For an improved mail service for the colony, the contractor agrees to provide suitable steamboats for the following routes and services, viz: One steamer to ply between Trepassey and Lamaline and intermediate ports; one steamer to ply in

Trinity Bay; one steamer to ply in Bonavista Bay; one steamer to ply in Notre Dame Bay; one steamer to ply between Placentia and Port-au-Basque; one steamer to ply between Port-au-Basque and Sydney, Cape Breton; one steamer to ply between St. Johns, Harbor Grace, or Carbonear and Labrador, east and north. The routes and services to be performed by the several steamers, respectively, shall be subject to the approval of the government. The charges for the transportation of passengers and freight by the steamers shall be the same as provided in respect to the railway. The railway and steamers shall be held to constitute one system.

NEW BRUNSWICK.

NEW RAILWAYS.

The projected Restigouche and Western Railway has become a reality. The road is being built by a joint-stock company, Messrs. Malcolm & Ross having the contract. The Dominion government has given a grant of \$3,200 per mile, and the local or provincial government \$2,300 per mile, making the total grant \$660,000, as the road is to be 120 miles long. The railway will run across the northern portion of New Brunswick, from Campbellton to St. Leonards, 12 miles above Grand Falls, on the St. John River.

It is expected that the Bangor and Aroostook Railway will extend its line to connect with this road; and, if so, it will give direct and rapid transit to New York City from here, cutting off about 180 miles.

The contractors expect to complete 10 miles of the road before the heavy snowstorms. Preparations for making a start were not completed until late in the summer, which accounts for the few miles of road that will be finished this year.

JAS. S. BENEDICT,
Commercial Agent.

CAMPBELLTON, *October 31, 1898.*

NOVA SCOTIA.

In his report in Commercial Relations, 1896-97, Consul-General Ingraham, of Halifax, says:

Railways.—Rail communication between the maritime provinces and the United States is at least twice a day the year round, and triweekly services of steamship lines are made in summer from Halifax and Yarmouth, Nova Scotia, and St. John, New Brunswick, to Boston, and all the year with regularity and increasing travel. The Intercolonial, from Halifax to Quebec and Montreal, is the principal railroad system of the maritime provinces. It is owned and managed by the Dominion government, and extends to Sydney, Cape Breton, on the one hand, there connecting with a branch to Louisburg, some 40 miles, completed last year by the Dominion Coal Company, of Boston; and on the other hand, to Pictou, Nova Scotia, thence by connection with boat—daily when the straits are not frozen over—to Charlottetown, Prince Edward Island, from which a railroad, also owned and managed by the

adian government, traverses the island. The only railroad running into Halifax not owned by the Intercolonial, but during the past year the government has com-
 ed a branch from Windsor Junction to Dartmouth, opposite Halifax, thus giving
 rails to Halifax Harbor for some 14 miles out. The Canadian Pacific, whose
 terminus is at St. John, New Brunswick, runs its cars over the Intercolonial to
 Halifax, as does also the Dominion Atlantic, a line through the Annapolis Valley to
 Yarmouth, Nova Scotia, connecting at Digby with steamer for St. John,
 Brunswick, and at Yarmouth with the Yarmouth Steamship Company's boats
 to Boston. From Yarmouth to Shelburne a coast line is being built.

The Dominion Atlantic Railroad branches off at Kentville, running 14 miles to
 support, on the Bay of Fundy, and another branch, called the Nova Scotia Cen-
 connects at Middleton, in the Annapolis Valley, and terminates on the southern
 shore of Nova Scotia at the important and growing town of Lunenburg.

This railroad system is well adapted for quick and immediate transportation by
 rail traffic from Halifax and other parts of the maritime provinces, and at reason-
 able rates. Cereals from Ontario and Manitoba are put down at St. John and Hal-
 ifax and transhipped into ocean steamships for Great Britain especially; while, on
 the other hand, flour, amounting to nearly 100,000 barrels a year, comes from those
 places through the United States in bond to Boston, and thence to Halifax by
 the Plant Line steamships, Canadian duty being 75 cents a barrel.

Steamship lines.—One steamer, either of the Allan Line or the Dominion, touches
 Halifax weekly, both outward and inward, between Liverpool and Portland, Me.,
 except the winter when the St. Lawrence is frozen over, while the Allan Line has a
 fortnightly boat the year round touching here and at St. Johns, Newfoundland, on
 its outward trip from Liverpool and Glasgow to Philadelphia.

The Beaver Line ran between St. John, New Brunswick, and Liverpool direct
 during the past winter. Within the past year the Furness Line has established a
 fortnightly service between Halifax and London the year round under
 a contract with the Dominion government.

Several steamship lines are also established between Halifax, the Bermudas, Porto
 Rico, Cuba, Jamaica, and as far as Demerara, while coast boats make regular sail-
 ings besides local train communication, with Cape Breton, Prince Edward Island,
 Miramichi, Miquelon, St. Johns, and other ports of the Newfoundland coast, and by
 rail communication at Pictou in summer as far as the Magdalen Islands.

Several water routes between the maritime provinces and Boston are the Inter-
 colonial, from St. John, New Brunswick; the Yarmouth, from Yarmouth, Nova
 Scotia; and the Plant Line, from Halifax, one of the steamers (the *Olivette*) being of
 the Dominion register. The two fine steamships, the *Portia* and the *Silvia*, of the Red
 Line, ply regularly between St. Johns, Newfoundland, and New York, touch-
 ing at Halifax. The Canada and Newfoundland Steamship Company have stanch-
 ions for passengers and freight between Halifax and Liverpool, touching at St.
 Johns, Newfoundland.

On the 15th of October, 1897, Consul-General Foster says:

International steamship communication with Boston has recently been established by
 the Dominion Atlantic Railway Company from the port of Yarmouth, Nova Scotia,
 by the new steamship *Prince Edward*, connecting with the Blue Nose Express from
 Boston twice a week. This route advertises transportation to Boston from Halifax
 in twenty-three hours.

FREIGHT RATES.

There have been no recent changes in freight rates from this port. The railway
 freight rates per 100 pounds for 100 miles range from 28 cents for first class to 7 cents
 for tenth class; for 500 miles, the range is from 45 cents for first class to 16½ cents for
 tenth class; and for 700 miles, 53 cents for first class to 17½ cents for tenth class.

Steamship freight rates, Halifax to Boston, per 100 pounds are: First class, 50 cents; second class, 40 cents; third class, 30 cents; fourth class, 25 cents; fifth class, 20 cents, and sixth class, 16 cents. Classification for railway and steamship freight is the Canadian joint freight classification.

ONTARIO.

OTTAWA-NEW YORK SERVICE.

Consul-General Turner, of Ottawa, in his report in Commercial Relations, 1896-97, announces the construction of a new line of railway from Ottawa to Cornwall, Ontario, with an international bridge across the St. Lawrence River at the latter point, affording direct communication with New York. This will shorten the distance between Ottawa and New York, says Mr. Turner, some 75 miles, and is expected to furnish a more direct means of communication between the lumber districts and eastern and southern New York and the Pennsylvania coal fields than now exists.

FORT ERIE COMMUNICATION.

The International Bridge, of which the Canadian end is within a few rods of this consular office, forms the principal channel of export from this section of the Province. It was built in 1873, Sir Cassimer Gzowsky, whose death has recently taken place, being the contractor. It is about half a mile long, 15 feet wide, with a swing draw, measuring 160 feet on each side of center pier. It is now simply a single-track railroad bridge. Three main lines cross it, viz, Grand Trunk, Wabash, and Michigan Central; also the Canadian Pacific cars operated by other lines.

On account of the steadily increasing traffic and the very heavy locomotives and loaded trains passing over it, it is considered inadequate to the demand and antiquated in construction. Permission has been granted by both Governments to rebuild and enlarge it. It is thought work may be begun within a year, and plans, if carried out, call for a double-track railroad bridge on top, with foot and carriage bridge and trolley-car tracks underneath. When this is done, it will be of great benefit to this village for business and residential purposes.

Two steam ferry lines ply between the two villages of Fort Erie and Bridgeburg and Buffalo.

The Welland Ship Canal traverses this district from north to south, uniting the waters of Lakes Erie and Ontario, and it is a portion of the system of inland navigation in Canada, which extends 2,260 miles, from the Straits of Belle Isle on the North Atlantic coast to Port Arthur at the head of Lake Superior. The canal is 26½ miles long, 100 feet wide, and 14 feet deep.

OSSIAN BEDELL,
Consul.

FORT ERIE, *October 11, 1898.*

ST. LAWRENCE CANAL.

Commercial Agent Hamilton, of Morrisburg, under date of October 15, 1897, writes:

The great St. Lawrence Canal is about completed to Morrisburg. This work involved widening the old canal, increasing the depth, and supplying new locks, etc. As fine masonry as could possibly be put up was used. This work has been in progress for nearly six years and has cost many millions. The work will still go on at Iroquois, about 7 miles above here. The whole work is a great credit to this Government and deserves special mention. The cost was not so important a consideration as excellence of work.

TRAFFIC ON THE WELLDAND AND ST. LAWRENCE CANALS.

The total quantity of through freights passed through the Welland and St. Lawrence canals, from Lake Erie to Montreal, during fifteen years, is given by Canadian official reports as follows:

Year.	Eastward, to Montreal.	Westward, from Montreal.	Year.	Eastward, to Montreal.	Westward, from Montreal.
	<i>Tons.</i>	<i>Tons.</i>		<i>Tons.</i>	<i>Tons.</i>
1882	108, 835	24, 488	1890	231, 746	31, 951
1883	205, 394	27, 468	1891	309, 593	14, 060
1884	168, 715	9, 425	1892	263, 144	9, 452
1885	132, 968	16, 115	1893	508, 016	16, 545
1886	244, 514	16, 801	1894	292, 191	9, 439
1887	213, 834	14, 075	1895	266, 659	10, 555
1888	183, 899	19, 310	1896	480, 077	10, 050
1889	298, 197	26, 370			

FREIGHT RATES ON CANADIAN PACIFIC.

Consul Ledoux writes from Three Rivers, July 21, 1898:

The Canadian Pacific Railway has put the following special freight tariff on its Ontario division, in connection with the Galt, Preston and Hespeler Road, the Toronto, Hamilton and Buffalo, the Michigan Central, the Erie and Huron, and the Lake Erie and Detroit River Road.

On grain and grain products to West St. John, New Brunswick, when consigned through to ports of call of the Seeley Packet Line, the rates per 100 pounds from the principal shipping points are: Toronto, Peterboro, Hamilton, Brampton, Guelph, Galt, Woodstock, London, Ingersol, St. Thomas, Chatam, Windsor, Preston, Hespeler, Welland, Brantford, Niagara Falls, Tilsonburg, Sarnia, Walkerville, Port Stanley, 14 cents; Wallaceburg, 15 cents; Fergus, Elora, 16 cents; Cardwell Junction, 16½ cents; Mount Forest, Harriston, 17½ cents; Wingham, 18 cents; Owen Sound, 18½ cents.

I am informed that a rate has been authorized by the Joint Traffic Association on corn in carloads from Chicago, Milwaukee, and other points, taking Chicago rates to St. John, New Brunswick, Halifax, Nova Scotia, and other points on the Intercolonial Railway, of 29½ cents per 100 pounds, with the usual difference on traffic from Milwaukee or breaking bulk across Lake Michigan.

CONNEAUT—PORT STANLEY FERRY.

Consul Culver, of London, on September 27, 1898, says:

Besides the Canadian Pacific, Grand Trunk, Michigan Central, Huron and Bruce, Lake Erie and Detroit River railways and their various branches which center here, the city of London and all this part of Ontario will greatly profit by a new and important

car ferry just established between Conneaut, Ohio, and Port Stanley. This line opens up to this territory the coal fields of western Pennsylvania and eastern Ohio by direct communication over the Pittsburg, Bessemer and Lake Erie Railroad and the London and Port Stanley Railroad. This route will in time also directly reach the great copper and nickel mines of the celebrated Sudbury district. It is expected that this new line will greatly reduce rates and thereby lessen the price of coal and other commodities shipped from the United States throughout western Ontario. The distance from Conneaut, Ohio, to London is only 70 miles.

NAVIGATION FACILITIES AT PORT HOPE.

Under date of November 2, 1898, Commercial Agent Dill writes from Port Hope:

There is a Canadian steamboat line from Charlotte (Rochester), N. Y., to Cobourg and Port Hope, running daily during the season. The distance is 62 miles, requiring five hours for the passage, and the fare is \$2.50 one way. There is a heavy summer travel, mostly Americans, sportsmen, and summer boarders.

The Richelieu and Ontario Navigation Company's steamers, between Toronto and Montreal, have for years made Port Hope and Cobourg calling places on their daily trips. It is now reported that next season the boats will follow the south shore of the lake, touching at Charlotte and Oswego for American traffic, while weekly or semiweekly trips by other boats belonging to the company will operate the old route.

ST. JOHN TRANSPORTATION FACILITIES.

Consul Myers writes from St. John, October 15, 1897:

Steamship lines.—There is a daily line of steamers running up the St. John River for a distance of 150 miles, stopping at intermediate points along the river. There is also a daily line of steamers running up the Kennebecasis River a distance of about 60 miles; also a steamship running daily between this city and Digby, Nova Scotia, distant 60 miles, connecting at that point with a railroad running to Halifax, a distance of 150 miles farther; also a daily steamship line running to Boston, stopping at Eastport, 48 miles (time, three and one-half hours); at Portland, Me., 231 miles (time, eighteen hours), and at other intermediate points. Distance from St. John to Boston direct, 310 miles (time, twenty-three hours). Said lines carry both freight and passengers at as low rates as in the United States. The steamships are comfortable.

Railroads.—There are three lines of railroads entering this city, viz:

The Canadian Pacific Railway, extending to the Pacific coast.

The Intercolonial Railway, extending from St. John to Halifax, Nova Scotia, a distance of about 275 miles. Time, about ten hours.

The Shore Line Railroad, from this city to St. Stephen, situated on the south shore of New Brunswick, a distance of about 85 miles. Time, about four hours. All are well equipped with elegant passenger cars and first-class rolling stock of all kinds.

New lines of railways.—There are at present no new lines of railways being projected, but there is in contemplation the construction of a new railroad line from St. Stephen, New Brunswick, to Bangor, Me., thus shortening the railroad lines between these two points. The present lines between these points are the Canadian Pacific Railroad and the Maine Central Railroad.

Communication with United States ports.—Via Central Pacific Railroad to Vanceboro, Me.; distance, 90 miles (time, three hours).

Via International Steamship Line to Eastport, Me.; distance, 48 miles (time, three and one-half hours).

SAULT STE. MARIE—DALTON ROAD.

Commercial Agent George W. Shotts, writes under date of Sault Ste. Marie, September 7, 1898:

The Algoma Central Railway, which is one of the roads granted a subsidy of \$3,200 per mile by the Canadian Government, is to run from Sault Ste. Marie, Ontario, in a northerly direction to Dalton, on the Canadian Pacific Railway, a distance of about 160 miles, with a branch running from Dalton south westerly about 40 miles to Michipicoton, a harbor on Lake Superior.

The Lake Superior Power Company owns the franchise, and I am informed that the branch running from Lake Superior to Dalton, on the main line of the Canadian Pacific Railway, is under construction, and that it will be completed as far as the "Helen" hematite iron mines, about 12 miles, by the 1st of November, 1899, and the balance of the branch will be completed next summer.

PRINCE EDWARD ISLAND.

Consul Vail, of Charlottetown, on August 12, 1898, writes:

Prince Edward Island has 210 miles of railway, extending from Charlottetown to Summerside and Tignish in the west, and to Souris and Georgetown in the east, with a branch line to Cape Traverse, the latter connecting with the ice-boat service, which is performed by boats on runners, hauled over the ice during the most severe period in each winter, when the steamer is unable to keep up regular connection with the mainland.

The transportation facilities in summer are by rail to Summerside, thence by steamer to Point Durham, or by steamer from Charlottetown to Pictou, there making railway connection. The Plant Line steamers make weekly trips between Boston and Charlottetown, while steamers owned by the Quebec Steamship Company and the Black Diamond and Dabell lines call here from Montreal. The steamer *City of Ghent* makes weekly trips between Halifax and Charlottetown. During the winter season, connection is made with the mainland at Pictou by steamer from Georgetown.

QUEBEC.

PASPEBIAC—GASPÉ RAILWAY.

Commercial Agent Boardman writes from Rimouski, August 31, 1899:

This railway company has a subsidy from the Province of Quebec of \$3,500 per mile for 20 miles up to Paspebiac, and \$3,500 per mile from Paspebiac to Gaspé, a distance of 82 miles. The Dominion Government has just granted an additional subsidy of \$6,400 per mile for 30 miles up to Paspebiac, and \$6,400 per mile from Paspebiac to Gaspé. The road is now in operation from Metapedia, on the Intercolonial Railway, to New Carlisle, a distance of 98 miles. Three miles more will complete it to Paspebiac, earning the subsidy from both governments to that point. This and the subsidy granted by the provincial and dominion governments will enable the company to complete the road to Gaspé.

MEXICO.

RAILWAYS.

Consul-General Barlow, of Mexico city, under date of November 23, 1898, sends the following:

Table of the principal railroads in the Republic.

Name, etc.	Miles.
RAILWAYS OF STANDARD GAUGE.	
Mexican Central: From El Paso to City of Mexico (1,224 miles). Branches: Chicalote to Tampico, Irapuato to Ameca, Lerdo to San Pedro, Silao to Marfil, Tula to Pachuca.....	1,963
Mexican International: From Ciudad Porfirio Diaz to Durango (540 miles). Branches: Sabinas to Hondo, Monclova to Cuatro Ciénegas, Hornos to San Pedro, Pedricerna to Velardena, Matamoros to Zaragoza.....	659
Senora: Nogales to Guaymas.....	262
Monterey and Mexican Gulf: Treviño to Tampico.....	388
Mexican Railway: Mexico to Vera Cruz (263 miles). Branches: Apizaco to Puebla, Ometusco to Pachuca.....	321
National Tehuantepec: Government railroad, now leased by S. Pearson & Son., Coatzacoalcos to Salina Cruz.....	192
Mexico, Cuernavaca and the Pacific: Mexico to Cuernavaca (75 miles), Puente de Ixtla to Los Amates (25 miles).....	100
Mexican Northern: Escalon to Sierra Mojada.....	79
Cazadero and Solis: Cazadero to near Solis.....	18
Rio Grande, Sierra Madre and the Pacific: Ciudad Juarez to Terrazas.....	155
Merida and Itzamal: Merida to Itzamal.....	41
Cordoba to Tuxtepec: Cordoba to Motzorongó.....	31
Merida and Progreso: Merida to Progreso.....	22
Western: Altata to Culiacan.....	39
Chihuahua and Pacific (in construction): West of Chihuahua.....	7
Lower California (in construction): San Quintin to Rio Colorado.....	17
Total.....	4,294
NARROW-GAUGE LINES.	
Mexican National: Laredo to Mexico city (840 miles). Branches: Acambaro to Patzcuaro, Mexico to El Salto, Matamoros to San Miguel.....	1,052
Interoceanic: Mexico to Vera Cruz (340 miles). Branches: Los Reyes to Puente de Ixtla, Los Arcos to Tlanqualpican, Virreyes to San Juan.....	559
Mexican Southern: Puebla to Oaxaca.....	228
Vera Cruz and Alvarado: Vera Cruz to Alvarado.....	44
Hidalgo and Northwestern: Mexico to Pachuca (70 miles). Branches: Tepa to Sototlan, San Augustin to Iyola.....	130
Michoacan and Pacific: Maravatio to Zitacuaro.....	56
Federal District R. R. (Valley and Tlalpam lines).....	20
Vanegas and Rio Verde: Vanegas to Matehuala.....	41
San Marcos and Nautla: San Marcos to Huixtla (40 miles). Branches: To San Juan de los Llanos.....	49
Toluca and San Juan de las Huertas: Toluca to San Juan.....	10
Mexican National Constructing Co.: Manzanillo to Colima (58 miles), Zacatecas to Ojocaliente (30 miles).....	88
Toluca and Tenango: Toluca to Tenango.....	15
Cazadero (2 feet): Cazadero to Nado.....	26
Jalapa and Orizaba (in construction), south of Jalapa.....	12
Guanajuato and Dolores: Rincon to hacienda of San Luis de la Pas.....	12
Merida and Peto: Merida to Santa Maria sugar factory.....	73
Merida and Valladolid: Merida to Tino, and branch to Progreso.....	71
Merida and Campeche: Merida to Campeche, and branch to Hunucma.....	133
Campeche and Lerma: Campeche to Lerma.....	4
Oaxaca Coal Railway: Tlacotepec to Guajuapan.....	12
Total.....	2,635
RÉSUMÉ.	
16 standard gauge lines.....	4,294
20 narrow-gauge lines.....	2,635
Total, 36 lines.....	6,929

Mr. Barlow adds:

There have been a number of railway extensions spoken of during the last year. The most important is of the Monterey and Mexican Gulf Railway, from Tampico or near by, to the City of Mexico, via Pachuca. An important enterprise, that of a

canal to unite southern Mexico (beginning at a point on the Tehuantepec Railway not far from Salina Cruz) with the neighboring Republic of Guatemala, has been given a concession.

During the last six months, the railway system has increased by more than 314 kilometers (195 miles), of which 62½ (36.8 miles) pertain to the Mexico, Cuernavaca, and Pacific Railroad; 60 (37.2 miles) to the Mexican Central on its branch from Jimenez to Hidalgo del Parral; 40 (24.8 miles) to the Mexican National between Patzcuaro and Uruapam; 25 (15.5 miles) to the International on its branch between Reata and Monterey, and the remainder to other lines, among which may be mentioned that which has lately joined the capitals of Yucatan and Campeche, an event which has with reason been celebrated with rejoicings by both States. Recently, the line between San Juan Bautista and the Gonzalez River was inaugurated.

Some of the companies have either executed, or have in preparation, noteworthy works on their lines, such as the completion of the tunnel between Dolores and Catorce, which is 2.212 kilometers (1.37 miles) in length; the permanent station building of the Mexican Southern at Oaxaca; and the plans for the introduction of electrical traction on certain of its lines, presented by the Federal District Railway Company.

On account of the severe damage periodically suffered by the provisional bridges of the Tehuantepec Railroad over the river of the same name, a new location of the road at that point has been undertaken, so that the line may cross the river under favorable conditions and by a metallic bridge.

COMMUNICATION WITH THE UNITED STATES.

A significant fact is that whereas, until recently, all rates to New York proper were made by water from Tampico or Vera Cruz, I have lately noticed overland shipments of even such bulky commodities as broom root, an evidence that the railways are awakening to the importance of the export trade from Mexico.

UNITED STATES-MEXICAN FREIGHT RATES.

It is beyond the purpose of this report to undertake to name all rates between the two countries, but I have endeavored to give a general idea of the rates charged on the commodities commonly imported and exported. Both freight and passenger rates are determined here, as in the United States, by traffic associations presided over by a chairman, and the rates named by him are reasonably stable, though, as is customary, subject to change, with or without notice, as may be stipulated. All intending shippers should communicate with the railway and obtain rates on the goods they expect to ship before making sale of same.

The following rates are in United States currency per 100 pounds, carload lots:

Articles.	From—	To—	Rate.
Agricultural implements and machinery.	New York.....	Mexico City.....	\$1.13
Ale or ginger ale, packed.....	do.....	do.....	.82
Bagging and bags.....	do.....	do.....	.80
Belting.....	do.....	do.....	1.22
Bluestone.....	do.....	do.....	.80
Books, boxed.....	do.....	do.....	1.22
Boots and shoes, boxed.....	do.....	do.....	1.22
Brick, fire.....	do.....	do.....	.70
Candles.....	do.....	do.....	1.00
Canned goods.....	do.....	do.....	.95
Carpets.....	do.....	do.....	1.32
Cement, in barrels.....	do.....	do.....	.59
Corks.....	do.....	do.....	1.77
Drugs and medicines.....	do.....	do.....	1.22
Electrical appliances.....	do.....	do.....	.90
Firearms.....	do.....	do.....	1.32
Furniture.....	do.....	do.....	1.38
Glassware.....	do.....	do.....	1.20
Glass (mirrors).....	do.....	do.....	1.47

¹ Less than carloads.

Articles.	From—	To—	Rate.
Groceries	New York	Mexico City	\$1.08
Hops, compressed	do	do	1.22
Ink	do	do	1.08
Insulators	do	do	1.85
Iron, bar and corrugated	do	do .....	.70
Iron beams	do	do .....	.90
Liquors, wines, whiskies, etc., in glass, packed	do	do	1.00
Machinery	do	do .....	.90
Mineral water	do	do	1.08
Nails and spikes	do	do .....	.75
Oil, lubricating	do	do .....	.90
Paints	do	do	1.85
Paper	do	do .....	.95
Pulp, wood	do	do .....	.75
Nails and fastenings	do	do .....	.38
Stationery	do	do	1.22
Cineware, nested	do	do	1.22
Wheels, car	do	do	1.22
Feathers	Vera Cruz and Tampico	New York .....	.63
Mineral ores	do	do .....	.21
Hides	do	do .....	.40
Coffee	do	do .....	.27
Chicle	do	do .....	.53
Deerskins	do	do	1.05
Goatskins	do	do .....	.50
Beans	do	do .....	.32
Horns	do	do .....	.27
Hair	do	do .....	.67
Bones	do	do .....	.27
Tobacco	do	do	\$1.58
Honey	do	do	\$2.10
Fruit	do	do	4.21
Beans	All stations between Lampa- zos and Saltillo, both in- clusive.	San Antonio, Tex .....	.38
	Gomez Farias to Vanegas	do .....	.48
	Catorce to Rincon	do .....	.58
	San Luis Potosi to Salvatierra, both inclusive.	Austin and intermediate points, except where low- er rates are provided. ....	.62
	do	All other points on I. M. Rwy. north of Austin, in- cluding Houston and Gal- veston, and points south of Palestine. ....	.65
	do	Points in Texas on the M., K. and T., except the 9 and S. branch 7 and 5 and L. and S. W. Rwy. ....	.70
	do	Texas common points on Y. C. and S. T. Rwy. (points taking higher than com- mon-point rates to be the usual differential higher). ....	.70
Textile	Montezuma, Venado, Los Charcos, La Luna Seca, Ca- torce, Vanegas, El Salado La Ventura, via Laredo Y. M. and Galveston.	New York .....	.63
	Saltillo, Ramos, Arispe, Santa Maria, Monterey, via La- redo Y. M. and Galveston.	do .....	.50
Zacaton (broom root)	Mexico	do .....	.50
	Maravatio	do .....	.69
	Toluca	do .....	.56 ¹
	Patzcuaro	do .....	.94
	Flor de Maria	do .....	.59
Hides and skins	Lampazos and Monterey	do .....	.50
	Saltillo	do .....	.55
	Vanegas	do .....	.70
	Catorce	do .....	.70
	Montezuma	do .....	.55
	San Luis Potosi	do .....	.50
	All routes between Villa Reyes and Maravatio, in- clusive.	do .....	.75
	Morelia branch points	do .....	.80
	Toluca	do .....	.60
	Mexico	do .....	.50

¹ Less than carloads.² Per bale.³ Per barrel.⁴ Per cubic foot.

Articles.	From—	To—	Rate.
Bones (minimum, 24,000 pounds per car).	Monterey	St. Louis, Mo.	\$0.37½
	Mexico City, Jesus Maria, and all intermediate points, including stations on El Salto and Morelia branches.	New Orleans.....	.40
	San Luis Potosi, Santa Maria, and all intermediate points.	.....do .....	.35
	Garcia, La Santa, and all intermediate points.	.....do .....	.30
	Catorce, La Santa, and all intermediate points.	Galveston .....	.32½
Green tropical fruits ¹	City of Mexico, San Luis Potosi, and intermediate points, and all points on the Morelia branch, also from Yantepea, Cordoba, Puebla, and San Marcos.	New Orleans, La.; Memphis, Tenn.; St. Louis, Mo.; Kansas City, Mo.; Chicago, Ill.; Cincinnati, Ohio; Louisville, Ky.; Milwaukee, Wis.; Denver, Colo.; St. Paul, Minn., and Minneapolis, Minn.	1.25
	.....do	Houston and Galveston, Tex.	1.18

¹ Owners' risk of decay. Prepaid or guaranteed. Minimum weight, 20,000 pounds per car. Oranges, estimated weight per box, 80 pounds; minimum, per car, 300 boxes, or 24,000 pounds.

I also give passenger rates effective at present by water from New York—

To Vera Cruz or Tampico:

First class	\$60
Second class	33
Third class	26

To Mexico City by Ward Line to Vera Cruz:

First class	65
Second class	43
Third class	33
Round trip, New York to Mexico City and return	115

The Southwestern freight bureau tariff, No. 4, effective January 27, 1898, gives the rates, rules, and regulations applying on freight forwarded between St. Louis, Denver (Colo.), Kansas City, Memphis, Little Rock, Fort Smith, Nashville, Louisville, Chicago, Cincinnati, Milwaukee, Dayton, South Bend, Macon, Middleboro, Omaha, Detroit, Cleveland, and Pittsburg, and points in their respective territories described herein. Also points in Texas and City of Mexico, San Luis Potosi and Monterey, and common points.

This tariff is generally referred to principally for south-bound business, but, as a matter of fact, on account of its limitations and the constant changes often made in some unnoticed corner of a supplement, it is used as a basis only, and all shippers contemplating business with Mexico should write to the proper persons, stating when they intend to ship and what commodities, and obtain a rate thereupon.

LAND TRANSPORTATION.

Land transportation from and to the United States through the frontier custom-houses of the Republic during the fiscal year of 1897-98, as compared with the fiscal year of 1896-97.

Custom-house.	Box cars.	Vehicles.	Mules.	Freight.	Passen- gers.
ENTRIES.					
				<i>Tons.</i>	
Camargo		8	24		455
Ciudad Juarez	5,508	2,683	5,474	101,881	15,283
Ciudad Porfirio Diaz	4,782	3,010		126,335	5,067
Guerrero	1	141	1,338	18	2,580
La Morita		350	175	489	2,586
Laredo	11,211	838		130,966	8,256
Mier		113	321	119	13,982
Nogales	2,777	603	907	22,490	16,233
Tijuana		694	1,090		6,215
Total movement in fiscal year 1897-98	24,279	8,441	9,329	382,299	70,677
Total movement in fiscal year 1896-97	31,044	7,217	6,508	578,934	36,787
Increase in 1897-98		1,224	2,821		33,890
Decrease in 1897-98	6,765			196,634	
DEPARTURES.					
Camargo		8	24		409
Ciudad Juarez	7,552	727	1,454	136,663	14,465
Ciudad Porfirio Diaz	5,550	4,954		136,189	4,549
Guerrero		189	1,365	18	2,448
La Morita		141	40	283	2,274
Laredo	1,464	199		13,000	7,397
Mier		112	316	118	13,567
Nogales	2,400	268	394	29,214	9,420
Tijuana		697	1,090		6,215
Total movement in fiscal year 1897-98	16,966	7,275	4,683	315,487	60,744
Total movement in fiscal year 1896-97	17,119	4,575	3,096	349,164	32,236
Increase in 1897-98		2,700	1,587		25,508
Decrease in 1897-98	153			33,676	

TELEGRAPH LINES.

During the last fiscal year, a number of new telegraph offices have been opened to the public. A new line has been strung between Esperanza and Tehuacan, and the lines between Banamichi and Arizpe and Teapa and Pichucalco have been incorporated into the Federal telegraph system, having previously belonged to the States of Sonora and Chiapas, respectively.

The substitution of copper for iron wire in the eastern section of the Republic has continued.

A general map of the telegraph system for technical and managerial purposes having become a necessity, one was ordered to be made by the Mexican Government, and it has now been completed. This map is of great utility not only to the management but to the public, as it gives an accurate idea of the present state of the communication facilities by electricity in the Republic.

The advantage of constant telegraph service has been extended to thirty-six more towns, thus increasing the earnings from this source. The total number of messages sent over the lines in the fiscal year 1897-98 was 2,086,050. During the half year from January to June, 1898, there was an increase of 24 per cent over the same period of last year.

On April 1 last, the service of telegraph drafts was inaugurated and operations of this line are on the increase, amounting, as they do, to \$150,000 per month. It is expected that in time this service will become of the greatest importance.

COMMUNICATION WITH VERA CRUZ.

Consul Canada writes from Vera Cruz, October 18, 1897:

All the railroads touching at Vera Cruz are improving their service as to security of roadbed, rolling stock, etc. Accidents are rare, even in the mountain districts. The Alvarado Railroad, running south, now connects with boats on the rivers Papaloapam, San Juan, Alonso Lazaro, and Playa Vicente. These river boats reach the towns of Tuxtepec, San Jose, San Juan Evangelista, Sombrerete, Palo Herrado, and Tesechoacan, and all intermediate points between them and Alvarado, the present terminus of this road.

The Interoceanic Railway has recently established an express service over its lines, that operates under the name "The Interoceanic Express." Offices are maintained in the large cities, such as Mexico, Puebla, Jalapa, etc., where quick delivery is made of express matter, as in the large cities of the United States. This business is almost entirely in the hands of Americans. All steamers on arrival are met by an employee of this company, who relieves passengers of the inconvenience of seeing their baggage through the custom-house.

Schedule of time between Vera Cruz and the United States.

By rail:	Days.	By steamer:	Days.
To Laredo.....	3	To Galveston.....	3
To El Paso.....	3	To New Orleans.....	4
To Galveston.....	4	To New York City.....	10-12
To New York City.....	6		

These data are equally true for passengers and mails.

Between Vera Cruz and the United States there are overland and submarine electric lines, the latter to Galveston, Tex., via Tampico.

The Federal Electric Telegraph connects with the United States via City of Mexico. However, this one will not render service to the public for United States points unless the submarine cable is interrupted, as the cable company has a concession giving it all foreign business.

NEW RAILWAYS.

Consul-General Barlow, of Mexico, on January 17, 1899, writes:

The Mexican Senate has approved the contract dated October 12, 1898, between the secretary of communications of the Republic and José Maria Botella, for the construction of a railway from Parral, in the State of Chihuahua, to Minas Nuevas, with the privilege of extending the same to the mining district of Concepcion. The Senate has also approved the contract with Mariano Gallardo and Anacarsis Peralta for the construction of two lines of railway in the States of Tabasco and Chiapas, the starting point of one of which is Pichucalco, to strike the River Blanquillo at the most convenient point; the other to run from Teapa to the most convenient point upon the river of the same name.

DURANGO—PACIFIC ROAD.

Consul Faulkner, of Durango, under date of November 12, 1898, says:

There is at present but one railroad running into Durango—the Internacional Mexicano. There is much talk of extending the road across the Sierra Madre to the coast. In fact, the surveying party is at present out in the mountains running the line for the proposed extension. While the cost of this work will be heavy, I expect to see the road in operation within the next few years, notwithstanding the opinion of many people here that it can not be built. This will open up a region hitherto

almost unknown, besides bringing us within a few hours' ride of the Pacific Ocean. The advantages which would accrue from its construction can hardly be calculated. I believe that if this connection is made it will shorten by six or eight days the time from Australia and Southern Asia to New York.

CHIHUAHUA—PACIFIC ROAD.

Under date of July 18, 1898, Consul Mills writes from Chihuahua:

A new railroad, the Chihuahua and Pacific, is now being constructed, commencing at Chihuahua and running in a westerly direction. The first section of 200 kilometers (125 miles) is to be completed by December, 1899. This first section of the road is to receive a subsidy from the General Government of \$11,179.80 per mile in Mexican bonds, equal to \$5,152 per mile in United States currency. This section of 125 miles also receives a bonus from the State of Chihuahua equal to \$2,208 per mile, United States currency. This railroad will penetrate a rich mineral, timber, and cattle country, and will open a new and inviting field for our merchants and manufacturers.

The Mexican Central is constructing another railroad westerly from Jimenez, a town 147 miles south of Chihuahua on their line.

This road, in its general direction and the character of country to be opened to the world by it, is so like the one above mentioned that a description of the one serves for the other.

MATAMOROS—MONTE MORELOS ROAD.

Consul Griffith, of Matamoros, on June 3, 1899, says:

I have to inform the Department that one of the local capitalists who has just arrived from the City of Mexico brings reliable information to the effect that the *Compañía Sautena* has been granted, by the Mexican Government, a concession to build a branch railroad from Matamoros, in the State of Tamaulipas, to Monte Morelos, connecting there with the Mexican Gulf Railroad. Eight thousand dollars is the subsidy which the concession carries, and a further assurance that the company has \$3,000,000 in cash will render the proposed construction easy. The leading citizens here entertain the utmost confidence in this project and feel greatly encouraged by the news that the concession and subsidy are already secured. Inasmuch as President Diaz two years ago declared that no more concessions for railroads would be granted by the Mexican Government unless positive assurance were given of the ability and intention of the company seeking such concession to construct the railroad, one may conclude that the near future will witness the commencement of the development on a large scale of the varied agricultural and mineral resources of the State of Tamaulipas.

RIO GRANDE, SIERRA MADRE AND PACIFIC RAILROAD.

Consul Kindrick writes from Ciudad Juarez, January 25, 1898:

The Rio Grande, Sierra Madre and Pacific Railroad was constructed as far as Casas Grandes about eight months ago. The length of the line, as it is at present operated, is 150 miles, Casas Grandes being the terminus. On the 13th instant the road was formally inaugurated by Governor Ahumada. The road is owned principally by New York parties. It penetrates a section rich in resources and heretofore almost inaccessible.

It is the ultimate object of the promoters of the Rio Grande, Sierra Madre and Pacific Railroad to extend it to the Pacific coast. This would increase the volume of exports, adding, perhaps, semitropical fruits to the commodities already exported.

CENTRAL AMERICA.

PROPOSED ISTHMIAN CANAL.

In the river and harbor bill passed by Congress March 3, 1899, provision was made for an investigation of the Isthmus of Panama (particularly the Nicaraguan and Panama routes) with the view to the construction of a canal by the United States to connect the Atlantic and Pacific oceans. The act reads:

That the President of the United States of America be and he is hereby authorized and empowered to make full and complete investigation of the Isthmus of Panama, with a view to the construction of a canal by the United States across the same to connect the Atlantic and Pacific oceans; that the President is authorized to make investigation of any and all practicable routes for a canal across said Isthmus of Panama, and particularly to investigate the two routes known respectively as the Nicaraguan route and the Panama route, with a view to determining the most practicable and feasible route for such canal, together with the proximate and probable cost of constructing a canal at each of two or more of said routes; and the President is further authorized to investigate and ascertain what rights, privileges, and franchises, if any, may be held and owned by any corporations, associations, or individuals, and what work, if any, has been done by such corporations, associations, or individuals in the construction of a canal at either or any of said routes, and particularly at the so-called Nicaraguan and Panama routes, respectively, and likewise to ascertain the cost of purchasing all of the rights, privileges, and franchises held and owned by any such corporations, associations, and individuals in any and all of such routes, particularly the said Nicaraguan route and the said Panama route; and likewise to ascertain the probable or proximate cost of constructing a suitable harbor at each of the termini of said canal, with the probable annual cost of maintenance of said harbors, respectively; and generally the President is authorized to make such full and complete investigation as to determine the most feasible and practicable route across said isthmus for a canal, together with the cost of constructing the same and placing the same under the control, management, and ownership of the United States.

To enable the President to make the investigations and ascertainments herein provided for, he is hereby authorized to employ in said service any of the engineers of the United States Army, at his discretion, and any other persons necessary to make such investigation, and to fix the compensation of any and all of such engineers and other persons.

For the purpose of defraying the expenses necessary to be incurred in making the investigations herein provided for, there is hereby appropriated, out of any money in the Treasury not otherwise appropriated, the sum of one million dollars, or so much thereof as may be necessary, to be disbursed by order of the President.

That the President is hereby requested to report to Congress the results of such investigations, together with his recommendations in the premises.

The President appointed as the commission Rear-Admiral John G. Walker, U. S. N., retired; Hon. Samuel Pasco; Alfred Noble, C. E.; Mr. Geor. S. Morison; Col. Peter C. Hains, Corps of Engineers, U. S. A.; William H. Burr, C. E.; Lieut. Col. Oswald H. Ernst, Corps of Engineers, U. S. A.; Lewis M. Haupt, C. E., and Prof. Emory R. Johnson.

BRITISH HONDURAS.

Consul Morlan writes from Belize, September 7, 1897:

Transportation facilities consist of weekly mail steamers from New Orleans, a fortnightly service with Mobile and New York, monthly steamers from Liverpool, and irregular steamers from London, to load mahogany and logwood. A large number of barks come each year to load logwood, and most of the lumber is imported from the United States in schooners. The German and Atlas lines have retired. A small steamer furnishes weekly communication with the northern part of the colony, and the mail steamers touch at the southern ports of the colony weekly. They will not, however, owing to quarantine regulations, take passengers to any intermediate points.

Freight rates to and from the United States are: For measured goods, 15 cents per cubic foot; for dry barrels, 75 cents; for wet barrels, \$1. Other freight is about one-half to 1 cent per pound, and large lots are subject to special arrangement.

PROPOSED RAILROAD.

Consul Avery, under date of Belize, August 22, 1899, writes:

During the past twenty years, several indefinite proposals have been made to this Government and to the colonial office for the construction of a railway from Belize to the eastern frontier of Guatemala, where it would be practicable to open up the immense forests of the province of Peten; but none of the offers have been approved, for it was not shown that the promoters had sufficient capital or security for undertaking the work, nor has any concession been granted by Guatemala to extend the line into that Republic. Now, however, the quiet and persistent efforts of the governor of this colony, Sir David Wilson, are apparently leading to success, as the following dispatch from the British secretary of state for the colonies shows:

[Extracts from Mr. Chamberlain's letter.]

"Mr. R. W. Perks, M. P., has submitted proposals for the construction and working of a railway in British Honduras, including a pier at Belize, and for the extension of the line to a place at or near La Libertad or Flores, in the Peten province of Guatemala.

"The draft agreement submitted may be regarded as of a provisional character, for while it is laid down in it that the colonial government would not be bound by its terms unless the company undertakes to construct not only the pier at Belize and a railway from Belize to the frontier into Guatemala, it is also provided that the company would not be bound to construct the pier at Belize, nor the railway from Belize to the frontier, nor the proposed extension from the frontier into Guatemala, unless the concession to be obtained from the Guatemalan Government for the construction of the proposed railway into Guatemala is granted in such form as shall be satisfactory to the company. On this point the company is to be the sole and absolute judge; but it will be incumbent on it, within the period of six months after any concession shall have been granted by the Guatemalan Government, to state whether, in the judgment of the company, such concession is in a satisfactory form and one which the company can accept. Mr. Perks has stated that the railway which the company would propose to build would be * * * of the type of the railways which have been constructed in the Argentine Republic, Mexico, and other American States.

"In consideration of the construction of the pier at Belize, the railway from Belize to western frontier of the colony, and the extended railway into Guatemala, Mr. Perks asks for a grant of £75,000 (\$364,988), payable in five installments of £15,000 (\$72,998) each, on each section of the railway of a given number of miles being completed in such a way that it could be opened for traffic, and for a land

grant of 200,000 acres, to be made in blocks of 40,000 acres as and when each of the sections of the railway is completed and ready to be opened for traffic.

"It is stipulated that a free grant will be made to the company of all lands and foreshore required for the construction of the pier and railway in British Honduras, so far as any such lands and foreshore, through which the proposed railway and pier shall pass, are Crown lands, and that the colonial government shall take what steps may be necessary for the purpose of securing for the company the necessary legal permission to acquire land for the purposes of the works.

"It will be within your recollection that the legislative council recommended in 1895 that the money grant for such a railway as is now proposed should be £60,000 (\$291,990), and the land grants 5,000 acres for every mile of railway constructed within the colony. Assuming that the length of the line from Belize to the frontier would be 72 miles, this recommendation would have entailed a land grant of 360,000 acres."

On the 15th instant, this proposal of Mr. Perks was accepted by the legislative council, with the recommendation that, if approved by Mr. Chamberlain, the work should begin not later than February, 1900. While it will be noted that the plan may be modified by the colonial office, or even rejected if thought proper, it is apparent that it is favorably regarded. The only means of access to the interior of this colony consists of the numerous rivers and the bridle paths, for there are no roads for vehicles. If Guatemala permits the road to be built into Peten there will be a large traffic from that district in mahogany and logwood, and fruit raising and agriculture would be developed in this colony, these industries now being confined to the coast.

While it is true that this proposal comes from English capitalists, there is little doubt that the entire equipment will be purchased in the United States; for the railways now in operation in Honduras, Guatemala, and Costa Rica are equipped with American rolling stock and machinery, in the latter country even at the expense of discarding the foreign equipment found in use there.

GUATEMALA.

The Northern Railroad, from Puerto Barrios to Guatemala City, will have an extension of 195 miles, of which 133 are already completed and in operation. When this road is finished it will connect with the Central at this capital and form a transcontinental line from the Atlantic to the Pacific Ocean, carrying goods without transshipment. At present all work of construction is suspended and, owing to the financial difficulties of the country, will probably not be resumed by the Government. The National Assembly has authorized the President to sell or lease the road upon such terms as will insure its completion at an early date.¹ The use of this road will necessarily reduce freight on

¹ On November 25, 1898, Mr. Beaupré writes that a contract has been entered into between the Government and Martin Roberts, an American citizen, for the operation of the Guatemala Northern Railroad.

A daily train for passengers and for freight is to be run each way between Puerto Barrios and El Rancho. Telegraph lines are to be maintained in good condition. The roadbed is to be always kept in good condition, and all ordinary repairs of line and rolling stock are to be made by the contractor.

The tariff for freight and passengers shall remain as at present, and may not be altered without authority from the Government.

both exports and imports, as Puerto Barrios, the Atlantic terminus, is connected with New Orleans, Mobile, New York, and European ports by several lines of steamers. The New Orleans, Belize and Royal Mail Steamship Company, owned by Machecha Brothers, of New Orleans, is the principal line, and has a monopoly of the fruit trade on that coast of the Republic. Its steamers make weekly trips from New Orleans to Puerto Cortez, Honduras, touching at Puerto Barrios and Livingston, in Guatemala.

On the Pacific side there are two regular lines of steamers touching at the ports of San Jose, Champerico, and Ocos. First, the Pacific Mail, which runs between San Francisco and Panama. There are five regular steamers per month on this line, and extra steamers run whenever there is an accumulation of coffee. The bulk of the coffee is shipped to Europe or New York via the Isthmus of Panama. The rate of freight from this Republic to London, Hamburg, New York, or San Francisco is about \$18.50. The sea freight on merchandise from San Francisco or Europe is about \$10; wharfage, about \$3.50; agency right, \$3.50; freight on Central Railroad, \$8; total to city of Guatemala, about \$24.

The Cosmos Line of Hamburg runs a steamer once a month around Cape Horn. The freight rate on coffee is about \$18.50 to either London or Hamburg; the rate on merchandise from Hamburg is about the same as that charged by the Pacific Mail. This line is a formidable competitor of the Pacific Mail for the coffee trade.

The subvention recently given by this Republic to the Compania Sud America de Vapores and the Pacific Steam Navigation Company, which I reported in April last,¹ will influence foreign commerce. It is an effort on the part of Chile to secure a share of the trade of Central America, her products being almost the same as those shipped from the United States. The Chilean Government gives a subsidy of \$50,000 and Guatemala gives \$15,000 per year. The steamers are to run as far north as Ocos, Guatemala, and must touch at Guatemalan ports at least once a week.

The Guatemala Central Railroad, from Guatemala City to the port of San Jose on the Pacific, a distance of 75 miles, is controlled by American capital, and has been a very successful and profitable enter-

¹In the report referred to, Mr. Beaupré said:

"The Pacific Steam Navigation Company, an English corporation, and the Chilean Compania Sud America de Vapores have for some time been jointly endeavoring to increase their Pacific coast trade, and, as a result of their negotiations, the National Assembly on March 26 authorized the President of this Republic to enter into a contract with these steamship lines to carry the mails between the ports of Valparaiso, Chile, and Ocos, Guatemala, giving them a subsidy of \$15,000 per year, that sum to be increased to \$30,000 per year when the steamers shall run to San Francisco. Boats must stop at least once a week at Guatemalan ports, and the tariff of transportation is to be fixed before the signing of the contract. This will interfere with the interests of the Pacific Mail Steamship Company, an American enterprise, which has long controlled the Pacific coast trade."

prise. It is ably managed, and practically all of the employees in the operating department are citizens of the United States. The rate of freight on imports averages \$8 per ton, gold, while passenger rates are 8 cents per mile, first class, and 4 cents per mile, second class, Guatemala currency.

A. M. BEAUPRÉ,
Consul-General.

GUATEMALA, *May 28, 1898.*

HONDURAS.

In 1868, an English company having obtained a concession from the Government of Honduras for the construction of an interoceanic railroad from Puerto Cortez, the main port of entry on the north coast, to Amapala, the port of entry on the Pacific coast, commenced work at the former place. When 57 miles had been completed the Government unfortunately authorized an issue of bonds. The company having sold \$30,000,000 worth of the bonds, discontinued the work and left the Government saddled with an enormous debt. Soon afterwards the bridge over the Chamelicon River was destroyed by a flood, thus rendering useless the 20 miles of road beyond San Pedro Sula. The 37 miles of road between this place and Puerto Cortez is all that the country can boast of at present, though there is a prospect that the road will, before a great while, be continued to Comayagua, and later to Amapala.

The remaining highways of the country are cart roads and mule trails. In 1885-86, the following roads were constructed by the Government: (1) From San Lorenzo and La Brea to the capital, Tegucigalpa, a distance of 32 leagues (the league, as fixed by the laws of Honduras, is approximately 2.6 English miles); (2) from Tegucigalpa to San Juancito, 7 leagues; (3) from Tegucigalpa to Yuscaran, 16 leagues; (4) from Tegucigalpa to Comayagua, 24 leagues, and Santa Barbara, 54 leagues. In addition to these roads constructed by the Government are (5) a cart road from San Pedro Sula to Venado, a distance of about 12 leagues; (6) one from San Pedro Sula to Macuelizo, 20 leagues, and (7) a road from San Lorenzo to Choluteca. A road of about 12 leagues would connect (4) with either (5 or 6), thus giving a through cart road from San Pedro Sula to the capital.

All freight for Tegucigalpa, Comayagua, and the neighboring part of the country is brought in by way of Amapala. From this place it is carried by means of a steam tug and rowboats to San Lorenzo and La Brea, the depots on the mainland, each about 6 leagues from Amapala. From these points it is carried either on pack mules or in ox carts, the latter being used only for articles too large to be carried on mules. Travelers may reach the capital either by way of Amapala and San Lorenzo or by way of Puerto Cortez and San Pedro Sula. The

journey on mule back from San Lorenzo to Tegucigalpa requires about three days, and that from San Pedro Sula to Tegucigalpa about seven days.

All goods having inland places for their destination should be packed so as not to weigh more than 130 pounds to the piece, as about 260 pounds constitute a mule cargo. The cost (freight and agent's charges) on a cargo of 260 pounds from Amápala to San Lorenzo is \$3 United States currency. The cost on a cargo from San Lorenzo to Tegucigalpa is from \$2.75 to \$5, depending on the season. The cost on freight carried by carts from San Lorenzo to Tegucigalpa is from \$0.60-\$0.75 for each arroba (25 pounds). Travelers making the trip from San Lorenzo to Tegucigalpa have to pay about \$4.50 for a mule and \$5 for the attending mozo. The passenger fare over the railroad from Puerto Cortez to San Pedro Sula is \$1.25, and the freight rate is $\frac{1}{2}$ cent or 1 cent a pound. Mules for making the trip from San Pedro Sula to Tegucigalpa can be hired for about \$10 each, and an attendant for about \$7.50. In addition to the charges mentioned the traveler is expected to provide food for attendant and mules along the way.

The Pacific Mail Steamship Company runs steamers twice a month from San Francisco to Amapala and from Panama to Amapala, the latter connecting with New York steamers of the same line at Panama. The time from San Francisco is twenty-one days; from New York, sixteen days. The Royal Mail Steamship Company runs weekly steamers from New Orleans to Puerto Cortez, and a monthly steamer from Mobile to Puerto Cortez and Ceiba. Another line runs boats every eight days from New York to Puerto Cortez.

W. E. LITTLE,
Consul.

TEGUCIGALPA, *September 24, 1896.*

UNITED STATES SYNDICATE IN HONDURAS.

Consul Jarnigan writes from Utila, under date of August 3, 1897, in regard to a concession by the Honduras Government to citizens of the United States as follows:

The concessionaries are to construct and operate a railroad from Puerto Cortez, on the Atlantic, to the Bay of Fonseca, on the Pacific coast. The Government grants the syndicate the railroad, with all its appurtenances, now being operated from Puerto Cortez to La Pimienta, a distance of about 30 miles. The company is granted exclusive right of transit over land and water throughout the length of its route—the water rights being limited, however, to the construction of bridges, wharves, etc., necessary in the operation of the railroad. A subsidy of 100 English feet of land is granted on each side of the road, whether it passes through public or private lands. In the latter case the Government is to pay the proper indemnity to the owners, and the company is to pay for the improvements of the land, in accordance with law. When the road passes inhabited sections only half this width of land is granted.

The Government concedes 5 square miles of land for every mile of railroad constructed. The land is to be located contiguous to the road, in alternate sections when the road traverses public lands. When it traverses private property the

company has a right to select sections of land (under the above-named conditions) from the public property. This choice is to be made within five years from the date of contract. The grant is not to extend within 1 mile from the coast line, but the company is allowed the privilege of constructing stations, etc. Branch roads can be constructed under conditions similar to those given for the main road, and one shall extend to Tegucigalpa. The company can use all materials necessary for the road which are found in the Government lands, and no charge shall be made for the same. It also has the right to all minerals, etc., found in the lands conceded, provided that this does not interfere with previously acquired rights of third parties. The development of these minerals is to be subject to the mining laws of the country.

The width of the line is not to be less than 1 yard 6 inches. Five miles shall be constructed within the first year. At the end of the second year, 25 miles; the third, 50. At the end of the sixth the line is to be completed. After seventy-five years the Government will have the right to purchase.

Those composing the syndicate are: Chauncey M. Depew, W. Seward Webb, John Jacob Astor, Benjamin F. Tracy, J. G. McCullough, Frederic B. Jennings, George S. Scott, Nathaniel A. Prentiss, Charles McVeigh, and Melville E. Lugalls, jr. The agents for the syndicate are Henry L. Sprague and W. S. Valentine, of New York.

NAVIGATION OF THE PATUCA RIVER.

Under date of March 31, 1898, Consul Little writes from Tegucigalpa:

Among the important acts passed during the annual session of the Congress of this country was one granting a concession to John E. Wood, representing capitalists of Cleveland, Ohio, for opening the bar of and navigating the Patuca River. The following is a brief outline of the concession:

The grantee is to open the bar at the mouth of the river, making a channel that will admit the lighter-draft ocean-going steamers, build a wharf and custom-house, and establish a line of steam transportation from the mouth of the river to a point about 150 miles from the sea.

In return, the grantee receives from the Government wharfage on all articles, whether of export or import, that pass through the channel of the bar; the exclusive privilege of navigating the river by steam or other motive power for a term of ten years; the preference in concessions for railroads from the head of navigation to points in the department of Olancho that may be granted by the Government; certain favorable terms to colonists that may come into the country under the auspices of the grantee or the company he may form, and 100,000 hectares (247,110 acres) of land.

The Patuca River is the most important stream in the country, and steam transportation will have been provided for what is considered the richest agricultural section of the country, if this scheme of navigating it is carried to a successful issue.

NICARAGUA.

RAILWAYS, TELEGRAPHS, ETC.

Under date of October 1, 1897, Consul Wiesike writes from Managua:

Nicaragua is no out-of-the-way country, being within reach of San Francisco through the Pacific ports of Corinto and San Juan del Sur by the steamers of the Pacific Mail Steamship Company, which make trips three times a month and take thirteen days. The connection with the Atlantic coast is furnished by the steamers of the Atlas Line, that make the trip from New York to San Juan del Norte, and vice versa, every fifteen days, and bring the time for the voyage from New York to Granada, Masaya, and Managua down to eleven days. Mail routes are the same, the

one by the Atlas Line being established only a short time ago, and preference being given it for its greater regularity. Postal conventions for the exchange of parcels post exist between Nicaragua and Germany, and the advantages which they have furnished the public on both sides are appreciated.

The national railways of Nicaragua are composed of the Western Division, from Corinto to Momotombo, touching Chinandega and Leon. This line is 58 miles long, and was opened for traffic in December, 1883. The Eastern Division runs from Granada to Managua. It was opened to the public in July, 1886. The whole cost of both divisions was \$2,700,000 in silver.¹ They are 3-feet 6-inch gauge, and are equipped with freight and passenger cars from the Brill Car Company, of Philadelphia, Pa., and with 27-ton engines from the Baldwin Locomotive Works.

There is a branch road 3 miles in length which runs from Chinandega to El Viejo. Only one road is in construction at present—from Masaya to Diriamba, touching five intermediate towns and traversing the richest coffee district of the country. It is 3-feet 6-inch gauge and 28 miles long, 8 miles of which are completed, and the rest expected to be done early next year. The rails, 30 pounds to the yard, are of German make, but the rolling stock will be of the same origin as the national lines.

The towns and villages of any importance are connected through a system of telegraph lines about 1,800 miles in length. The wires are American galvanized iron No. 8; the apparatus used now exclusively is the combination telegraph instrument of Bunnels, New York. There is another telegraph line to San Juan del Norte, and one to Bluefields, on the Atlantic coast. The principal cities along the railway are connected by telephone, the line being about 200 miles long; the wire used is hard-drawn copper wire, No. 10 for the general and No. 16 for the local lines. The apparatus used is the French Roulet and the American Hunnings' transmitter.

Counsel Sorsby, of San Juan del Norte, on December 1, 1898, says:

The transportation facilities of Nicaragua have undergone and are undergoing advantageous changes. The national railway system is being extended, and branch lines are being constructed. Within the past three years, about 26 miles have been built, and the work projected is being prosecuted with commendable zeal. With this 26 miles completed, the national railway line, with spurs and side tracks, is about 126 miles in length.

A railroad is being gradually extended from the Rio Grande River in the direction of the Matagalpa (coffee) district. An option for a contract between Messrs. Cragin & Eyre, of New York and Chicago, and the Nicaraguan Government, for an interoceanic canal, given October 28, 1898, and to become effective October 20, 1899, in the event of the lapse of the present canal contract, provides for the construction of an interoceanic railway within three years after the company has been organized, and also for building of other lines of railway through all parts of the country, and for purchasing existing lines. The contract includes an absolute grant of 400,000 hectares (988,400 acres) of land, and an option to purchase 1,000,000 hectares (2,471,000 acres) additional, at 1 peso (\$0.448) per hectare. On September 28, 1897, a concession with an ordinary privilege to navigate Lake Nicaragua and the San Juan River, and an exclusive privilege to navigate the Silico Lagoon, and to construct tramways and railroads the length of the line, when it is found necessary to avoid the obstructions of the San Juan River, was given to the Atlas Steamship Company, a powerful English corporation. This concession further provides that the Government, during the period of thirty years for which the concession is given, shall not extend aid to any other steamship company which may be established on Lake Nicaragua. This concession has been transferred to the Caribbean and Pacific Transit Company, Limited, an offspring and "feeder" of the Atlas Steamship Company, and a short narrow-gauge railroad from the Silico Lagoon to the junction of the Colorado and San Juan rivers is under construction.

¹ A silver dollar was worth at that time about 76 cents, United States currency.

The water in the San Juan River, between its junction with the Colorado River and Greytown, during about three months in the year becomes too low for navigation, and the purpose of the Silico Lagoon Railroad is to overcome that obstacle to the uninterrupted transportation facilities of the company between Greytown and Granada.

The Silico Railroad will be 6½ miles in length, 3 feet 6 inches gauge, with an average grade of 1¼ per cent, and curves varying from 10 to 16 degrees. The rails weigh 35 pounds to the yard. The estimated quantity of cuts and embankments is 120,000 cubic yards. On the first mile, at the Silico end, are some very heavy through cuttings, varying in length from 100 to 800 feet, and from 25 to 45 feet deep. Great difficulty has been experienced in the construction of the road because of the heavy and constant rains, and because all of the work is being done by hand. About 3 miles have been finished. Work has practically been suspended until next spring (about March), when the dry season is popularly supposed to set in. The company will then have two years within which to complete the work. The Government gives a subsidy of 5,000 pesos (\$2,243) for each mile completed.

The estimated cost, inclusive of rolling stock and equipment, wharves, warehouses, etc., is about £20,000 (\$97,330), but this estimate is probably too low. The bar at Greytown has been and is a source of great danger, expense, delay, and inconvenience to both passenger and freight traffic, but the Government has had a fine dredge built, with which it will be able to keep open and clear the bar and harbor.

With the completion of the Silico Lagoon Railroad and the opening of the bar, it is thought that the Caribbean and Pacific Transit Company will afford a more regular, safe, systematic, and rapid method of handling both local and through freights, which should tend to the development of the Atlantic coast division, and should make San Juan del Norte (Greytown) the most important commercial port of the Republic; and if a company acquires the national railway system from Corinto, on the Pacific, to Granada, on Lake Nicaragua (as now seems probable), and cooperates with the Caribbean and Pacific Transit Company, it would be possible to divert a reasonable proportion of the Central American freights from the Panama route.

OCEAN FREIGHT RATES.

Consul O'Hara, of San Juan del Norte, under date of October 1, 1897, says:

The Hamburg-American Line gives rates to San Juan del Norte from Hamburg, Geestemünde, Antwerp, Grimsley, or Havre of \$6.80 to \$9.25 (United States currency) per ton of 40 cubic feet or 1,000 kilograms (2,204.6 pounds), at the company's option.

The Atlas Steamship Company has established the following rates in United States currency:

New York to San Juan del Norte:

Coal in bags, per ton of 2,240 pounds	\$1.50
Kerosene, per case of two 5-gallon tins.....	.35
Flour, per half barrel .....	.40
Fence wire, per 100 pounds .....	.35
Measurement goods, per cubic foot15

London to San Juan del Norte:

Cement, per ton of 2,240 pounds.....	5.47
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United Kingdom to San Juan del Norte:

Iron goods, per ton of 2,240 pounds	7.30
Measurement goods, per 40 cubic feet	9.73

Hamburg to San Juan del Norte:

Rice, per ton of 2,240 pounds	7.30
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Special rates are given on flour, kerosene, and wire to be shipped to the interior, viz, kerosene, 30 cents instead of 35, the regular rate; flour, 30 cents instead of 40, and wire, 30 cents instead of 35.

Rates on exports are as follows:

Coffee:

To New York, per 100 pounds	\$0. 30
To London and Continent, per 2,240 pounds	9. 73

Rubber, hides, and skins:

To New York, per 100 pounds .....	. 60
To London and Continent, per 2,240 pounds	14. 60

The Royal Mail Steam Packet Company classifies freights for Pacific ports in Central America and Mexico as follows:

Valuable.—Laces, silks, ribbons, velvets, opium, quinine, furs, silk and cotton and silk and woolen mixed goods, silk elastics, silk and kid gloves, scientific instruments, indigo, porcelain, oil paintings, plated ware, ivory, and other valuable goods.

Fine.—Apothecary wares, arms, apparel, books, cashmere, cigars, cottons (printed), cotton stuffs, cottons (bleached and dyed), crape, cutlery, cinnamon, drugs, engravings, essences, encaustic tiles, glass (fine), gloves (not kid or silk), haberdashery, hosiery, linens (bleached), mercery, merinos, millinery, muslins, medicines, perfumery, playing cards, private effects, small wares, stationery, surgical instruments, tobacco, tissues, umbrellas (silk), woolens (fine), worsteds.

Coarse.—Bagging, bedding, boots and shoes, baizes, blankets (cotton), beads, bicycles, brushes, brush ware, candle wick, coverlets, canvas, carpets, china ware, chandeliers, cloves, cumin seed, cotton (unbleached or gray), druggets, floor cloth, fustians, flannel, hats (straw), hats (silk and felt), india-rubber ware, jute cloth, lamp wick, linens (unbleached), leather (dressed), machinery (small), musical instruments, osnaburges, oilcloth, quilts, rugs, safes, slop clothing, sewing machines, saddlery, sacks, sacking, sponges, thread, umbrellas (cotton), woolens (coarse), yarns.

Common.—Biscuits, blocks, borax, brimstone, butter, candles, capsules, castings, carriages, cart bushes, cheese, confectionery, copying presses, cordage, felt (sheathing), fire bars, furniture (common, chairs excepted), groceries (not tea), Epsom and Glauber salts, gun metal, hams, hardware, hammocks, harness (common), hops, ink (in bottles), ironmongery, lampblack, lamps (common), lead, lead piping, leather (undressed), malt, mats, matting, mattresses, machetes, millboards, oilmen's stores, paints, paper hangings, perambulators, printing paper, provisions (not tea), pulleys, rope, seeds, saltpeter, shot, scythes, sickles, stearine, show cases, tin, tin plates, tricycles, twine, wax, window glass (common), wines and spirits in cases and small, strong casks.

Rough.—Agricultural implements, alum, aerated waters, barrows, basins (iron), baskets, basketware, bedsteads (common), bellows, bottles (empty), brooms, broom-tails, buckets, blacking, chairs (common), charcoal, clogs, corks, door frames, emery cloth, fire clay, fire bricks, galvanized cans, glassware (common), hoes, hollow ware, kennels, mops, pails, packing paper, pickaxes, pumice stone, sadirons, sash weights, shovels, sieves, slates (school), soap (common), spades, soda, stoneware, tanks (empty), tinware, trunks (empty), tobacco pipes (clay), wire netting, wrapping paper, zinc.

Special.—Quicksilver, barley, beer, boilers, bran, bricks, cement, chalk, coke, dholl, earthen pipes, earthenware, engines, flagstones, hay (compressed), curbstones, launches (steam or other), lime, locomotives, millstones, manures, machinery (large), oats, oxbows, plaster of paris, pollard, potatoes, puncheon packs, retorts, rice, salt, straw papers, thrashing machines, timber, truss hoops, wagon frames, wheels, and axles, whitening, wood hoops.

Iron.—Anchors, bars, bolts, nuts, chains, galvanized girders, hoops, nails, pigs, pipes, rails, rods, sheets, tubes.

The minimum charge for freight from London is £1 1s. (\$5.11 United States currency) to Panama, £1 11s. 6d. (\$7.85 United States currency) to Central American ports.

Permanent telegraphic communication has been opened between Bluefields and Rama. By this means Bluefields now has direct cable communication with the United States via Vera Cruz, Mexico, and Galveston, Tex.

STEAMSHIP CONTRACT.

Consul Sorsby sends from San Juan del Norte, under date of May 14, 1898, copy of the contract between the Government of Nicaragua and the Pacific Steam Navigation and South American Steamship companies, of Valparaiso, Chile. The companies are to give service according to an established itinerary between Valparaiso, Chile, and ports of Central America as far as Ocos, Guatemala. A steamer shall arrive once every week at Corinto or San Juan del Sur and make two connections each month at Colon for New York. In case of the extension of the service to Mexican or Californian ports, the itinerary may be modified; but in no case shall the steamers touch at Corinto or San Juan del Sur less than four times a month. The steamers are to carry the mails according to the proper regulations, and the contract will last two years, with the option of continuing two years longer if notice of abrogation is not given three months before its expiration by one of the contracting parties.

NEW ORLEANS-BLUEFIELDS STEAMSHIP LINE.

Consul Sorsby, under date of San Juan del Norte, January 17, 1898, says:

Mr. M. J. Clancy, United States consular agent at Bluefields, Nicaragua, states that a steamship company styled the "Bluefields Steamship Company, Limited," was recently organized in the State of Louisiana, with a capital stock of \$150,000, with the following list of officers for the year 1898: President, Mr. S. Steinhart; vice-president, Mr. B. J. Harris; treasurer, Mr. A. B. Orr; secretary, Mr. E. L. Merrick; general manager, Mr. Jacob Weinberger. All are residents of New Orleans, La., where the principal office is located. The company has a manager at Bluefields (Mr. H. W. Brown), and an agent will be appointed at Rama, Nicaragua.

There will be four steamers regularly employed between New Orleans and Bluefields—the *Hiram*, *Suldal*, *Sunnira*, and *Alabama*, all of Norwegian register.

The *Alabama* is a new vessel, and will make her first trip from Bluefields to New Orleans in February. She will be the fastest ship in the service, and is expected to run from Bluefields to New Orleans, 1,210 miles, in less than four days. Her freight capacity and passenger accommodations will be superior to those of any other vessel on this route.

The passenger rates by this company will be: For the *Hiram*, *Suldal* and *Sunnira*, from Bluefields or Rama to New Orleans, cabin, \$30; steerage, \$20; for the *Alabama*, cabin, \$40; steerage, \$25.

The same rates apply from New Orleans to Bluefields and Rama.

This company is a consolidation of the Weinberger Steamship Company, the Caribbean Fruit Company, of New Orleans, and the Orr & Laubenheimer Steamship Company, of Mobile, Ala. For the present, at least, there will be no regular steamship service between Mobile and Bluefields. The probable effect of the new organization will be to regulate and control freight rates and the shipment and price of bananas.

NICARAGUA CANAL.

Since the suspension of work by the canal company in 1893, nothing has been done toward actual construction on the line of the Nicaragua Canal. Various efforts have been made to reorganize the enterprise and obtain the necessary funds. In 1895, Congress appropriated \$20,000 for the purpose of ascertaining the feasibility and cost of the construction of the Nicaragua Canal, and constituted a board of three engineers to make the necessary surveys. The committee (which consisted of Lieut. Col. William Ludlow, U. S. A., civil engineer, M. T. Endicott, U. S. N., and Alfred Noble, of Illinois) reported to Congress February 7, 1896, and the report was printed as Document No. 279, Fifty-fourth Congress, first session. It recommended further explorations and surveys. At the extra session of Congress, in June, 1897, a clause was inserted in the general deficiency bill appropriating \$150,000 to continue the surveys and examination authorized by the act of 1895, with a view to making plans for the entire work of construction of the canal. The President of the United States was authorized to appoint a commission, and it consisted of Rear-Admiral John G. Walker, U. S. N., retired, Capt. Oberlin M. Carter, Corps of Engineers, U. S. A., and Lewis M. Haupt, a civil engineer. Subsequently, Captain Carter was replaced as a member of the commission by Col. Peter C. Hains, Corps of Engineers, U. S. A. The report of the committee, which was made to the President early in 1899, has not yet been made public.

In the river and harbor bill passed by the Fifty-fifth Congress, third session, 1899, the President was authorized to make complete investigation as to the most feasible and practicable route across the Isthmus of Panama, particularly as regards the Nicaraguan and Panama routes, together with the cost of constructing the same and placing it under the control of the United States. One million dollars was appropriated for defraying the expenses of such investigation.

The President appointed as the commission Rear-Admiral John G. Walker, U. S. N., retired; Hon. Samuel Pasco; Alfred Noble, O. E.; Mr. George S. Morison; Col. Peter C. Hains, Corps of Engineers, U. S. A.; William H. Burr, C. E.; Lieut. Col. Oswald H. Ernst, Corps of Engineers, U. S. A.; Lewis M. Haupt, C. E., and Prof. Emory R. Johnson.

SALVADOR.

Consul Jenkins sends from San Salvador, March 3, 1899, translation of a contract entered into by the Government of Salvador and the Central American Public Works Company, Limited, of London. Concessions and contracts, says the consul, were given this company in 1892 and again in 1894 to construct and operate the Acajutla and Santa Ana Railroad and the Acajutla and San Salvador Railroad.

The contract demands that the company shall maintain at all times, for the public service, a train making at least one daily round trip between Acajutla and the terminal stations of Santa Ana and San Salvador, excepting under circumstances over which it has no control. A service of at least two round trips per week between Ateos and La Ceiba del Guarumal is to be maintained; and appropriate connections will be established, so that one may be able to travel daily between said terminal stations.

The company is to hasten as much as possible the construction of the projected road between Nejapa and San Salvador, to the end that the railroad will be concluded to the capital by the 30th of June, 1900.

WEST INDIES.

BRITISH WEST INDIES.

ANTIGUA.

Vice-Consul Galbraith writes from Antigua, October 25, 1897:

There are four steamship lines calling at this port in the month. The royal mail steamer calls every Wednesday, one week with mails and cargo from England, the following week with mails and cargo to England. The Quebec Steamship Company's vessels from New York call with mails and cargo every ten to twelve days. They are not, however, very regular. Scruttons Sons & Co.'s steamers from England come once a month, but are very irregular. Pickford & Black's Halifax and West Indian Line gives very regular service from and to Halifax, Nova Scotia, every month. There are also, during the crop season, a good many sailing vessels leaving for New York and the breakwater with cargoes of muscovado sugar. These, however, are getting fewer every year, owing to the keen competition of the steamship lines. This competition has also forced out of the carrying trade the United States schooners, which at one time carried most of our imports from the United States.

Under date of October 10, 1898, Consul Hunt says:

The oceanic transportation facilities of the island remain the same as in previous years. The steamships of the English Royal Mail and of the Halifax and West Indian Line run on a regular schedule, which is rigorously maintained.

Direct communication with the United States continues to be confined to the Quebec Steamship Line, the boats of which run at irregular intervals. As one result the mail service from the United States is of the most unsatisfactory character, and an improvement is imperatively demanded as an adjunct to the advance in commercial relations with our country.

It has frequently happened during the past few months that mail matter post-marked in Washington, New York, and Chicago on a given date, and matter mailed on the same date in the interior of Germany, Austria, and other continental countries and transmitted via New York has reached here in the same mail bag. In one flagrant instance two letters mailed on the same date, one in Chicago and the other in Vienna (the latter being in addition held for one week in the New York post-office awaiting the departure of a mail steamer), reached here contemporaneously. In view of the fact that in cabling their orders the local buyers rely largely upon the latest editions of the various price lists or prices current, a more regular and satisfactory mail service is an absolute necessity.

At the present time, it is possible to get price lists from London of later date than from the United States, although the length of the voyage is two weeks in one case as against eight days in the other. It is suggested that additional mails might be dispatched from New York by steamships calling at St. Thomas or Jamaica, and thence brought to the Leeward Islands by the boats of the Royal Mail on their weekly north-bound and south-bound trips.

BERMUDA.

Consul Greene writes from Bermuda August 31, 1898:

Communication with the United States and Great Britain is supplied by the Quebec Steamship Company, which during about five months, covering the winter season, runs a weekly steamer; the rest of the year, one twice a month. Pickford & Black send a monthly steamer from St. Johns, via Halifax, to Demerara and intermediate ports, calling at Bermuda. The steamer *Beta* makes a monthly trip from Halifax, calling here, at Turks Island, and Kingston, Jamaica.

Occasional tramp steamers from England, Canada, and the United States, and also sailing vessels, with cargoes of lumber, hay, feed, ice, etc. (returning in ballast), visit these islands.

Under date of October 20, 1899, Mr. Greene says:

That there is to be an improvement in transportation methods. The Quebec Steamship Company proposes to run a steamer every five days, beginning December 1, and continuing six months.

JAMAICA.

Consul Eckford, of Kingston, September 26, 1896, says:

Shipping.—Jamaica has 42 outports open to foreign commerce, of which the principal are Kingston, Port Antonio, Montego Bay, Black River, Savanna la Mar, St. Anns Bay, Falmouth, Milk River, Lucea, Morant Bay, Annotto Bay, and Port Maria. During the year, 1,168 vessels cleared from the ports of the island, being 32 in excess of the previous year. Of this number, 698 were steam vessels and 470 sailing vessels. Of the total number, 162 were American vessels, 82 being steam and 80 sailing, with a tonnage of 75,052 tons, being an increase of 35,711 tons over last year. Shipping facilities from the United States to the island are excellent. The Atlas Steamship Company (British) runs weekly steamers from the city of New York to Kingston and return. There are about 8 vessels upon the route, and another fine passenger steamer is in process of construction.

The Kerr Line (British) has a number of vessels, principally engaged in the fruit trade, running from the various outports of the island to New York.

The Boston Fruit Company (American) owns and has chartered 12 vessels, with a tonnage of from 381 to 1,440 tons, engaged in the fruit and passenger trade, and running from Port Antonio (the head station), Kingston, Annotto Bay, Buff Bay, Hope Bay, Port Morant, and other outports, to New York, Philadelphia, Boston, and Baltimore.

The West Indian and Pacific Line runs bimonthly steamers from the city of Kingston to New Orleans via Mexican ports.

The Independent Line recently commenced running vessels from New York to Kingston and return. These are principally engaged in the fruit trade.

A number of tramp steamers ply between the several outports of the island and the ports of the United States.

coastwise steamers ply around the island weekly, and there are a large number all freight-carrying cutters or "droghers."

freights.—In consequence of the amount of competition, freights are very reasonable rates have been as low as 18 cents per 100 pounds to ports in the United

ways.—There are 191 miles of railroad in the island, running from Kingston to go Bay on the northwest side, to Port Antonio on the northeast side, and to on, a small town almost in the center of the island. The original Jamaica ry Company was incorporated in the year 1843, and the line was opened for for a distance of 14½ miles in 1845. In 1869 the extension of 11 miles had been and in 1877 the Government purchased the road for \$500,000. In 1885, the track en extended under Government supervision for 24½ miles to Porus and 17½ to n. In 1890, the West India Improvement Company purchased the railroad ie Government, and with great skill and ability completed the track over the ins to the seaports on the northern side, Montego Bay, and Port Antonio.¹

ways.—The highways of Jamaica are the pride of the island. The macadam of road building is altogether used in the construction of Government roads, main highways are termed, and also on most other roads. There are over iles of main roads, and 1,800 miles of parochial roads. The Government is ilding a carriage road from Gordon Town, a few miles from Kingston, over intains via Newcastle (the Government barracks where the white troops are d) to Buff Bay, a seaport on the north side of the island.

graphs and telephones.—The telegraph system is in the hands of the Govern- There are wires connecting all the principal towns and villages in the island, ns in all. The telephone system is used in all the principal towns, and con- y private corporations. Nearly all the public and private buildings in the Kingston and suburbs are connected by telephone.

NEW STEAMSHIP LINE.

British Trade Journal, October, 1899, notes the establishment of steamship line between England and Jamaica. The colonial as contracted with the Jamaica Fruit and Produce Association irect fruit and passenger service, to begin in May, 1900. The t is for five years, and the steamers will run twice a month, at age speed of 15 knots. They will have storage for at least ouches of bananas. The terminal points will be Southampton, ngston and Port Antonia. The subsidy is £10,000, of which is to be contributed by the Imperial Government.

¹ Dent writes from Kingston, April 24, 1899:

eam railway connecting the three principal towns of the island was built erican company. The Government gave over the old road, made certain ts, and guaranteed bonds. There was great friction and litigation grow- Government claims on account of construction, the company failed, and nment is now about to take over the railway. The cars are principally erican style, and the locomotives also, except on the old portion of the re they still use English locomotives and compartment cars. Ordinary r the masses are called third class, and the rate of fare averages 2 cents a ese cars have compartments cut off for a small number of first-class pas- ho pay an average of 4 cents a mile. The time occupied in making the t Antonio is about four hours, and to Montego Bay about six hours.

ST. CHRISTOPHER.

TELEGRAPH AND CABLE SERVICE.

Vice Commercial Agent Percival, of St. Christopher, under date of September 6, 1897, says:

The West India and Panama Telegraph Company, Limited, worked by English capital, is the only concern of the kind in the island. Cable communication is complete with all parts of the world.

The rates are as follows:

WEST INDIES, CENTRAL AND SOUTH AMERICA.

	Tariff per word.	Equiv- alent.		Tariff per word.	Equiv- alent.
	<i>s. d.</i>			<i>s. d.</i>	
Antigua*	3	\$0.06	Haiti—Continued.		
Barbados*	2 1	.50	Gonaivos, Jacmel, Mirago- ane, Le Petit Goave, St. Marc	8 11	\$2.16
British Guiana:			Jamaica—		
Georgetown	4 3	1.03	Kingston and Holland Bay	4 8	1.13
Other stations	4 3	1.03	Other stations	4 8	1.13
Colon	7 9	1.88	Martinique:		
Cuba:			St. Pierre*	1 1	.25
Cienfuegos	6 5½	1.56	Other stations*	1 1	.25
Havana	7 3½	1.77	Panama	8 7	1.02
Santiago	5 2	1.25	Puerto Rico:		
Other stations	(*)		San Juan*	1 2	.25
Curacao	9 8	2.44	Other stations*	1 2	.25
Dominica*	1 10	.20	Santo Domingo, all stations	9 4	2.25
Dutch Guiana	4 1 10	.44	Santa Cruz*	1 1	.25
French Guiana:			St. Lucia*	1 4	.75
Cayenne	4 3 6	.84	St. Thomas*	1 10	.25
Other stations	4 3 8	.88	St. Vincent*	1 7	.38
Grenada*	2 0	.48	Trinidad:		
Guadeloupe:			Port of Spain	2 6	.60
Basse Terre*	7	.14	San Fernando	2 7	.62
Point à Pitre*	8	.16	Venezuela	11 5	2.77
Haiti:					
Mole St. Nicholas	7 3	1.76			
Port au Prince and Cape Haitien	8 3½	2.01			

* The minimum charge is 5s.; any number of words can be sent for this sum up to the number which, at the tariff per word, would come to 5s.; thereafter each word is charged at the above word rate.

1 If a word contains over nine letters, it pays double.

2 Add 6d. per message.

3 2d. per word more than above rates, according to route.

4 Add rate to St. Pierre, Martinique.

5 Add 1s. per message.

6 Add 5d. per message.

7 Add 3d. per word, except on five words in address.

NORTH AMERICA AND EUROPE, VIA HAVANA.

	Tariff per word.	Equiv- alent.		Tariff per word.	Equiv- alent.
	<i>s. d.</i>			<i>s. d.</i>	
United States:			British Columbia	9 10	\$2.36
Florida, Key West	7 11	\$1.92	Great Britain and Ireland,		
Florida, other stations	8 6½	2.07	France, Germany	10 0	2.43
East of Mississippi	8 11½	2.17	Norway, Denmark	10 5	2.33
Galveston	8 11½	2.17	Italy, Holland	10 3½	2.50
West of Mississippi	9 4½	2.27	Spain:		
Cape Breton	9 4½	2.27	Barcelona	10 6½	2.56
Vancouver Island	9 4½	2.27	Other stations	10 7½	2.58
Nova Scotia, New Brunswick,			Austria-Hungary	10 4½	2.52
Canada, and Manitoba	9 2½	2.23	Belgium, Switzerland	10 2½	2.48
Prince Edward Island	9 8½	2.85			
Newfoundland, St. Pierre, Mique- lon	9 10	2.38			

TRANSPORTATION.

terrestrial transportation is of a most primitive nature, ox carts being used for carrying produce to shipping points. Horses are used generally as a means of locomotion. The roads are macadamized and kept in good condition.

Coastwise transportation is effected by lighters of from 5 to 8 tons burden.

Sea transportation is conducted on the most favorable lines, and affords means of communication with all parts of the world. Steamers calling here are of the Royal Mail Steam Packet Company, under contract with Great Britain for mail service with the West Indies. European mails are received fortnightly. The boats also carry mails to the Windward and Leeward islands.

The steamers of the Quebec Steamship Company, with headquarters at Quebec and principal agency at New York, serve as the principal means of communication between United States ports and this island. The steamers have no fixed dates for going, but call here every ten or fifteen days from New York.

Canadian steamers owned by Pickford & Black, of Halifax, Nova Scotia, call here monthly. Then there is the "Direct Line," owned by Scrutton, Sons & Co., of London, running to and from the West Indies.

Three of the steamers of the four lines referred to are under the British flag.

Besides these, the Norwegian steamship *Talisman*, plying between New York and the West Indies, calls here occasionally to land breadstuffs, lumber, and other United States goods.

 TRINIDAD.

This island is 1,331 miles nearer to New York than to the principal European ports. Freight rates are about 50 per cent less in all-round rates in favor of United States shippers. The time required from New York to Trinidad is from eight to twelve days less than from European ports. There are three regularly established steamship lines between America and Trinidad.

The Trinidad Line sails fortnightly from New York via Grenada to Trinidad, requiring nine to ten days to make the passage. The subsidized Dutch Line sails every three weeks from New York via the principal West India Islands to Trinidad, requiring twenty to twenty-two days for the passage. Pickford & Black's Line sails fortnightly from Halifax and St. Johns via the Bermudas and principal West India Islands, requiring twenty-five to twenty-six days for the passage. Besides, there are many sailing vessels chartered by local merchants.

ALVIN SMITH,

Consul.

TRINIDAD, January 19, 1898.

CUBA.

RAILWAYS.

In the book entitled *Cuba and Porto Rico, New York, 1898*, Mr. Robert T. Hill, of the United States Geological Survey, says:

The public railways of Cuba aggregate about 1,000 miles, a larger part of which is comprised in the United System of Havana, extending from that city west and east through the tobacco and sugar districts of the *Vuelta Arriba* and *Vuelta Abajo*, and connecting it within a day's ride with the principal cities west of *Cienfuegos* and *Sagua la Grande*. The western terminus of this system is *Pinar del Rio*, 106 miles from Havana; the eastern terminus, *Villa Clara*, is about 150 miles distant. One of the lines of this system runs due south across the island from Havana to *Batabano*, for the purpose of making connections with the south coast steamer at that point. Other short lines run to *Marianas* and *Las Playas*, 8 miles west, and to *Guanajay*. There are practically two parallel lines from Havana to *Colon* and *Matanzas*. The more northern is used for through passenger service. The southern line serves the important towns in the southern sugar district, such as *Bejucal*, *San Felipe*, *Guines*, *La Catalina*, *La Union*, and *Corral Falso*. Lines also extend southward from *Matanzas* to *La Union*, and from *Cardenas* to *Murga*; from *Cardenas* to *Yagua Ramas*; from *La Isabella*, at the mouth of the *Rio Sagua la Grande*, by way of the town of *Sagua la Grande*, to *Santo Domingo* and *Cruces*, and from *Palmira* to *Cienfuegos*.

Another east and west system, nearly 100 miles in extent, runs from *Caibarien* to *Cifuentas*, within 10 miles of the *Sagua la Grande* branch of the United System of Havana. If this gap were closed the total eastward extension of railways from Havana would be nearly 250 miles.

In the portion of the island east of a line drawn from *Sagua la Grande* to *Cienfuegos* are numerous short, independent lines, running from seaports to the interior. The largest of these is the *Caibarien* system above enumerated, which has many small branches.

On the opposite or south coast another short road of less than 20 miles runs from *Casilda*, through *Trinidad*, northward. East of this longitude an independent road 25 miles long connects the interior city of *Sancti Spiritus* with *Las Tunas*. Just opposite, on the north coast, are five short lines, two of which have ramifying branches radiating out from the town of *Yaguajay*. Still eastward, a military line 32 miles long runs north and south across the island along the *Moron-Jucara* trocha. The next railway is encountered 50 miles east of the latter, running in an easterly direction for 30 miles between *Puerto Principe* and the seacoast near *Nuevititas*. From the latter place, through the eastern part of *Puerto Principe* and *Santiago* provinces, no railways are found until reaching *Santiago de Cuba*, on the south coast, from which three short lines radiate: One northwest to the village of *Cobre*, 10 miles distant, another due north 20 miles to *San Luis*, and another eastward along the coast toward the *Juragua* iron mines. The most eastern railway of Cuba connects the city of *Guantanamo* with the suburb of *Jamaica*, 6 miles north, and *La Caimanera*, the seaport, about 10 miles south.

TELEGRAPHS.

According to a War Department circular issued February 1, 1899, telegraph offices have been established at the following-named places on the island of Cuba:

Names of offices.	Provinces.	Names of offices.	Provinces.
Alacranes (Alacranes).....	Matanzas.	Maribel.....	Havana.
Alacranes.....	Do.	Matanzas.....	Matanzas.
Alacranes.....	Havana.	Marianao.....	Havana.
Alacranes.....	Do.	Minas.....	Puerto Principe.
Alacranes.....	Santiago.	Nueva Paz.....	Havana.
Alacranes.....	Havana.	Nuevitas.....	Puerto Principe.
Alacranes (when land line interrupted can also be reached by Cuba submarine cable).....	Santa Clara.	Pinar del Rio.....	Pinar del Rio.
Alacranes.....	Matanzas.	Palmas Soriano.....	Santiago.
Alacranes.....	Santiago.	Puerto Principe.....	Puerto Principe.
Alacranes.....	Pinar del Rio.	Regia.....	Havana.
Alacranes.....	Havana.	Sagua la Grande.....	Santa Clara.
Alacranes.....	Havana.	San Antonio de los Baños.....	Havana.
Alacranes.....	Havana.	San Cristobal.....	Pinar del Rio.
Alacranes.....	Havana.	Santa Cruz del Sur (also Cuba submarine office, reached only via Havana).....	Puerto Principe.
Alacranes.....	Havana.	Santa Cruz.....	Pinar del Rio.
Alacranes.....	Havana.	Santiago de Cuba (also direct by cable via Havana or New York).....	Santiago.
Alacranes.....	Matanzas.	San Luis.....	Pinar del Rio.
Alacranes.....	Havana.	San Luis.....	Santiago.
Alacranes.....	Matanzas.	Songo.....	Do.
Alacranes.....	Havana.	San Felipe.....	Havana.
Alacranes.....	Santiago.	San Juan y Martinez.....	Pinar del Rio.
Alacranes.....	Matanzas.	San Nicolas.....	Havana.
Alacranes.....	Havana.	Santo Domingo.....	Santa Clara.
Alacranes.....	Santa Clara.	Trinidad (Cuba submarine cable office, reached only via Havana).....	Do.
Alacranes.....	Matanzas.	Tunas de Zaza.....	Do.
Alacranes.....	Havana.	Vanello.....	Pinar del Rio.
Alacranes.....	Matanzas.	Vedado (suburb of Havana).....	Havana.
Alacranes.....	Havana.	Union.....	Matanzas.
Alacranes.....	Santiago.		

Commercial business is handled at a uniform local rate of 2 cents per word; a message of less than 10 words is rated as a 10-word message. When a message passes first over a local line, second over a long line, and third over a local line, two local rates will be charged. Messages from the United States are generally routed as follows: For the provinces of Havana, Matanzas, Pinar del Rio, and Santa Clara, via Havana; for the province of Puerto Principe, through Santa Cruz, Pinar del Rio and Cuba submarine cable; for the province of Santiago, through Santiago de Cuba, either via Havana and the Cuba submarine cable or via New York and the French telegraphic cable.

WATER TRANSPORTATION.

William J. Clark, in a book entitled Commercial Cuba, New York, 1898, says:

One of the most important of the principal lines of regular steamers are those of the Transatlántica Española, ordinarily known as the Spanish Steamship Company. It has received an annual subsidy of about \$800,000 from the Spanish Government. Its New York line has dispatched good steamers from that port to the 10th, 20th, and 30th of each month, some going on afterwards to Vera

Cruz, Mexico. Its line between Havana and Cadiz has also run large ocean steamers regularly every ten days and in later years many extra ones. Some of these steamers, on their way to or from Spain, have stopped at Porto Rico.

The next Spanish lines of importance are those of the Havana Company, which have touched at the principal ports of Cuba on both the north and south coasts.

Some of those run on the northern route go as far westward as Mexico and eastward as Porto Rico.

The New York and Cuba Mail Steamship Company (Ward Line) is perhaps the best known company operating regular lines to the island. It is under progressive and able American management, and well deserves the praises which travelers to and from Cuba have given it. It has run steamers from New York to Havana every Wednesday and Saturday, every alternate boat going through to Tampico. It has also dispatched boats semimonthly from New York to Santiago and Cienfuegos via Guantanamo. No less conspicuous has been the Plant Company's semiweekly line from Havana to Key West and Tampa, the steamers *Olivette* and *Mascotte* of this line being among the most welcome and frequent sights of Americans in Havana.

The Munson Steamship Line, of New York, has also operated frequent and good steamers from New York to Matanzas, Cardenas, and Sagua la Grande; also a steamer to Vera Cruz, Mexico, stopping at Havana.

Waydell & Co., of New York, have also dispatched steamers with some regularity from New York to Matanzas, Cardenas, Sagua la Grande, Caibarien, Guantanamo, Santiago, and Cienfuegos.

A monthly Morgan Line steamer has run between Havana, Key West, and New Orleans. There is a German line from Havana to Hamburg; a British line from Vera Cruz to Southampton, which stops monthly at Havana, and a French line from St. Nazaire, which runs an occasional steamer to and from New Orleans and Vera Cruz, stopping at Havana.

During the winter months, the vessels of the Quebec Steamship Company occasionally stop at Havana going north from the other West Indies.

While through the lines above mentioned good connections are made with the Central American and Mexican ports and with Puerto Rico and Nassau, no regular connections have existed with the other West India islands, although tramp steamers have sometimes given direct communication between these points.

With almost as great regularity as those of the public lines, steamers are dispatched from Boston, New York, Philadelphia, and Baltimore to various Cuban ports by some of the companies engaged in the mining industry and the fruit trade, this being especially true of the Juraguá Mining Company and the Boston Fruit Company, both of which operate good boats, those of the former being larger than many of the regular lines. The Boston Fruit Company has small fast steamers, up to the usual American standard. Many of the other steamers engaged in the fruit trade, however, are Swedish and Norwegian, which carry freight at lower rates than American steamers can afford to.

FRENCH WEST INDIES.

MARTINIQUE.

Under date of October 1, 1898, Consul Darté, of St. Pierre, says:

There is a telephone system on the island, the principal line being from St. Pierre to Fort de France. The two cable lines have stations here, the West India and Panama Telegraph Company, Limited, and the Compagnie Française des Câbles Télégraphiques, the former reaching New York via St. Croix, Jamaica, Bermuda and Halifax, while the latter's connection with New York is via Haiti.

Regarding transportation conditions, the steamers of the Quebec Steamship Company, the Compagnie Générale Transatlantique, and the Royal Mail Packet Company

call twice every month at Martinique, while small vessels visit the different ports of the island, carrying commodities. Between Fort de France and St. Pierre the small steamers of the Steam Yacht Company make daily trips, carrying passengers and commodities. Merchandise to be transported to the interior is carried by small carts, donkeys, and upon the heads of men and women. There are no railways in Martinique, with the exception of a small tramway at St. Pierre.

Passports are not required from persons coming to the island, and they are not molested. Goods coming from foreign countries are not required to show country of origin.

HAITI.

RAILROADS.

There are but two railroads in Haiti, one in Port au Prince, a tramway running through two of the principal streets, propelled by small steam motors.

According to the concession, the total length of track when completed will be 18 miles. The company now has 6 miles completed in the city. The road will be extended a few miles outside of the city, north and south. The motors are built by Porter & Co., of Pittsburg, Pa.; cars, by Sharp & Co., of Wilmington, Del. The rails (35 pounds per yard) are from Carnegie & Co. The railroad ties and all the material come from the United States. The fare is 10 cents (9 cents United States currency), with no transfers. The capital is German and Haitian; the general manager, F. Hermann.

At Port de Paix an overhead wire traction road was recently completed, extending about 15 miles into the interior, for the transportation of logwood, coffee, and other products. The road has been built with United States capital, and the company, under the official name of "Compagnie Haitien," has its central office in the city of New York. The material used in the construction of the road has been furnished by the Trenton Iron Works. It is supposed that this road will facilitate the transportation of logwood and coffee very much, as heretofore all these products were transported on donkeys and mules. In other parts of the country produce is brought to the cities by ox carts, donkeys, and mules.

The coffee from the small villages on the coast is brought to the Port au Prince market by small sailing boats, carrying from 1 to 5 tons. Logwood, plantains, etc., are also transported by these vessels. On return they take provisions and all kinds of merchandise to supply the small country stores.

STEAMSHIP LINES.

There is a line of small steamers, *Le Service Accélééré*, leaving Port au Prince about every twelve days, one going north and one south, touching at all ports, carrying passengers and freight.

There are several lines of steamships, German, French, and Italian, sailing regularly between this island and Europe, bringing the mails, merchandise, and passengers, and taking coffee.

There are two lines of steamers plying between here and the United States—the Atlas Line and the Dutch Royal Mail Line. The former has been making regular trips every fourteen days, bringing mail, merchandise, etc. These steamers touch also at Cape Haitien, Gonaïves, St. Marc, Jeremie, Petit Goave, Aux Cayes, and Jacmel. They take the mail from this city and leave it at Navassa, to be taken by the succeeding steamer on her passage northward.

The Dutch Royal Mail Steamship Company has heretofore been making a trip every three weeks, but since the 1st instant has organized a half-monthly service. These steamers, leaving Amsterdam, touch at several ports on the Spanish Main, the Antilles, Jacmel, and Aux Cayes, leaving this port for New York direct.

There is also a line of Spanish steamers, touching here on the 17th and 28th of every month, that takes the mail for the United States via Havana, Cuba.

JOHN B. TERRES,
Vice-Consul-General.

PORT AU PRINCE, *October 8, 1897.*

PROJECTED RAILWAY.

Plans are being perfected for beginning, within the next two months, the construction of a line of narrow-gauge railway from Cape Haitien to La Grande-Rivière du Nord, a point situated about 18 miles to the northeast. The capital stock is \$450,000 and the estimated cost \$250,000. The syndicate projecting the enterprise has already subscribed \$25,000, while 675 shares, at \$500 a share, are open to general subscription, with a guaranteed interest by the Government of 8 per cent. The material, the contract for which has not yet been awarded, is to be purchased wholly in the United States. Mr. H. Thomasseh, the engineer who is to direct the work and who also constructed the tramway at Port au Prince, testifies to the superior workmanship and incomparable durability of material obtained from the United States.

In the articles of incorporation the Government grants to Messrs. Cincinnatus Leconte and Blanc Eusèbe, the former at present minister of the interior and public works, the exclusive privilege of constructing the road in question, the concession to last for a period of sixty years. All articles and material necessary for the work are to be admitted free of duty. The Government grants to the concessionaries for a period of thirty years the tolls of an iron bridge which is to be the terminus of the road at Cape Haitien, and also the public lands in the districts of Cape Haitien and Grande-Rivière along the route.

LEMUEL W. LIVINGSTON,
Consul.

CAPE HAITIEN, *July 16, 1898.*

PUERTO RICO.

According to an article in the Bulletin of the Bureau of American Republics for August, 1898, there are 163 miles of railroad in the island and 170 under construction. Lines connect San Juan and Camuy (62 miles), Aguadilla and Mayaguez (82 miles), Yauco and Ponce (22 miles), Carolina and San Juan (13½ miles), San Juan and Rio Piedras (6½ miles), and San Juan and Catana (6 miles).

About 470 miles of telegraph line are in service, and there are some 50 miles of good road on the island.

Mr. Hill, in the book heretofore mentioned (see under Cuba), says that there are more than 1,200 streams in Puerto Rico, the principal of which are the Rio Grande, Bayamon, Plata, Cibuco, Manati, Arecibo, Camuy, and Guajataca, flowing north; the Culebrinas, Anasca, Guanajiba, and Mayaguez, flowing west; the Portuges, Jacaguas, Descalabrado, Coamo, Guamani, and Guayanes, to the south; and the Humacao, Aguabo, and Fajarda, to the east. Most of these are navigable for all vessels for a distance of 2 or 3 leagues, but have troublesome bars across their mouths. Two lines of steamers circumnavigate the island, stopping at the various ports, and there is communication with Britain, England, Cuba, Santo Domingo, St. Thomas, Martinique, Guadalupe, South America, and the United States. The Red D Line and the New York and Porto Rico Steamship Company give service between the United States and Porto Rico.

TELEGRAPHS.

According to a circular issued by the War Department in February, 1898, telegraph offices have been established at the following-named places in Puerto Rico:

Hilla,	Carolina,	Las Marias,	San Juan,
o,	Ciales,	Lares,	San Turce,
o,	Cabo Rojo,	Mayaguez,	Santa Isabel,
tas,	Caguas,	Manati,	Utuaedo,
ta,	Coamo,	Mannaba,	Yabucoa,
,	Fajardo,	Ponce,	Yauco,
quitas,	Guayama,	Patillas,	Vieques Island (by
on,	Humacao,	Rio Piedras,	heliograph).
,	Isabella,	San Sebastian,	
,	Juncas,	Salinas,	

Telegraph messages pay an extra rate of 2 cents per word for such messages. Other rates are the same as those for Cuba.

Telegraph offices in Puerto Rico are connected with both Ponce and San Juan de Puerto Rico. These distributing points are reached via Havana or via New York.

SANTO DOMINGO (DOMINICAN REPUBLIC).

Under date of July 28, 1897, Consul Grimke writes from Santo Domingo:

I have to inform the Department of the completion of a railroad, about 45 miles long, between Puerto Plata, on the north coast, and Santiago, in the interior of the Dominican Republic. Although the distance covered by the road is comparatively unimportant when compared with the great railway lines of the United States, it is by no means insignificant for this country. Its construction has been the work of years, and the line, short as it is, crosses two mountain ranges. American and European capital is embarked in the enterprise, and the road is operated by the San Domingo Improvement Company, an American corporation. Since 1892 Edward Hall, an American engineer, has directed the work of construction. The materials for building and operating the road have come largely from Europe, although a portion, such as bridges and some of the rolling stock, has been imported from the United States. Messrs. Drake & Stratton, American contractors, were awarded the contract for constructing a part of the line. On the 16th of next month the road will be formally opened by the President of the Republic, General Heurieux. I am informed that it is well equipped with rolling stock, and will run three trains a day between Puerto Plata and Santiago. The country through which the line passes comprises some of the richest coffee and cacao lands of the island. The object is to connect the fertile valley of Santiago with a seaport. This valley produces for export coffee, cacao, tobacco, beeswax, hides, lignum-vitæ, mahogany, satinwood, logwood, etc. In the Dominican Republic there is but one other railroad for public use, viz, the Samana and Santiago Railroad, which has been in operation since about the year 1887 and runs from Samana to La Vega, in the valley of Santiago, a distance of 60 miles. It was built and is owned and operated by Scotch capital.

SOUTH AMERICA.

INTERCONTINENTAL RAILWAY.

The Intercontinental Railway Commission, appointed in 1890,* made provision for surveying parties and adjourned to await the reports of the engineers, full power being delegated to an executive committee of five members, with Mr. Alexander J. Cassatt, president of the Intercontinental Railway Commission, as chairman. Three surveying parties were sent into the field, the number being limited by lack of larger funds. The amount available at the time was a little over \$133,000, which was subsequently increased to a total of nearly \$300,000. The surveys were originally intended to include the following routes: (1) From the western boundary of Mexico through Guatemala, Salvador, Honduras, Nicaragua, and Costa Rica; then through the Isthmus of Panama into Colombia. (2) From Quito, Ecuador, northward to Colombia and through that country, including the Isthmus of Panama, until a junction was effected with route No. 1. (3) From Quito, southward through Ecuador

* See p. 88 of this volume.

and Peru to Lake Titicaca, on the borders of Bolivia. (4) From Oruro to La Paz, Bolivia, to Puno and Cuzco, Peru, connecting with route No. 3. (5) From Huanchaca to Potosi, Bolivia, then crossing the Paraguay River, to Corumba, and onward through Brazil via Coxim, until connection was made with the railroads having their eastern termini at Rio de Janeiro. (6) From Potosi, Bolivia, along the Pilcomayo River to Asuncion, Paraguay, connecting with the railroads of that country and of Uruguay.

The object of these surveys was to ascertain the feasibility of a trunk line connecting the railroad system of Mexico with a point in South America (Huanchaca, Bolivia), from which three main lines might diverge to (1) Chile, extending along the Pacific slope of the Andes; (2) Rio, the capital of Brazil, through the vast territory drained by the Paraguay and its affluents; (3) the River Plate countries.

Assuming that Mexico, Uruguay, and the Argentine Republic had effected their systems so as to provide the adequate connections, it would be possible, upon the completion of the projected lines, for the traveler taking the train at New York, or Washington, or at any large city in the United States to continue his journey by land to Rio, to Montevideo, to Buenos Ayres, on the Atlantic side, and to any important point in Ecuador, Peru, Chile—in fact, the whole extent of the Pacific coast of South America. The existing railways in Mexico, connecting with the systems of the United States, already afford through service to the City of Mexico, and beyond that point a line is to be built to the frontier of Guatemala. Railroads already in operation or projected would form part of the system in Central America and Colombia, from the Cauca Valley in the latter country, a line might be built to connect the great trunk line with points in Venezuela.

In Brazil, Chile, the Argentine Republic, and Uruguay have already considerable mileages of railroad which may be utilized, the main work of construction in South America would be found in Colombia, Ecuador, Peru, and Bolivia.

The surveying parties completed their work by July, 1893, but it was not until a few months ago that the results were given to the public in printed form, the intervening time having been consumed in the preparation and printing of the great mass of data collected. Corps No. 1 covered the region between the southern frontier of Mexico and the San Juan River in Costa Rica and surveyed routes aggregating over 10,000 miles. Corps No. 2 covered the region between the Savegre River in Ecuador, with a branch to the Magdalena River. Corps No. 3 surveyed a transit line from Quito, Ecuador, to Cuzco, Peru, a distance of 1,000 miles. The object of the surveys, it is explained in the report of the commission, was not the location of a railroad, nor the preparation of detailed estimates, but simply to determine the practicability of constructing, within limits of reasonable cost, a trunk line connecting the more important centers of North, Central, and South America," the character of the work performed was, consequently, "more or less that of the nature of a preliminary railroad survey, accompanied by

descriptive memoirs and approximate estimates, supplemented, however, by more extensive explorations and investigations wherever the intricate character of the country or the probable future development of the natural resources would seem to warrant." Owing to lack of funds, the proposed surveys in Brazil and through Bolivia to the River Plate were not undertaken, but the report explains that, in Bolivia, the completion of proposed extensions of the existing road would make the section in that country complete, and that for connection with Paraguay and Uruguay, a line down the valley of the Pilcomayo, along the Osborn concession to Asunción, has been considered. In southern Bolivia, investigations have been made to extend the railroad line from Uyuni to Quiaca, 125 miles from Jujuy, at present the northern terminus of the Argentine system. For connection with Brazil, the construction of a railroad from Oruro or Challapata to Sucre and Pomabamba, as is proposed, would render unnecessary the proposed survey across Bolivia, starting at Huanchaca and running via Pomabamba to the Paraguay River at Corumbá. In Brazil itself it would be necessary to prolong the line along the Taquary River, via Coxim, to the valley of the Paranahyba, ascending thence the valley of the Rio Grande to Uberaba, which is in railroad communication with Rio de Janeiro and Santos.

The Argentine railway system is the most extensive in South America, and one of the lines, as the commission states, carries railroad communication from Buenos Ayres to Jujuy near the base of the Bolivian plateau. The building of 125 miles of road from Jujuy to Quiaca, Bolivia, would make the chain complete. Another road extends across Argentina to the Andes, and the completion of a gap of some 46½ miles in the mountains would connect it with the Chilean section of the interoceanic line and provide a through route between Buenos Ayres and Valparaiso, so that a traveler arriving at either city would be able to reach the other by striking directly across the continent. The total distance from the southern boundary of Mexico across Guatemala, Salvador, Honduras, Nicaragua, Costa Rica, Colombia, Ecuador, Peru, Bolivia, and the Argentine Republic is stated to be 6,489.76 miles, of which 1,494.63 miles of railroad are in operation, leaving 4,995.13 miles to be constructed.

The railroads of Mexico connect with those of the United States at four points, viz: Laredo, Eagle Pass, and El Paso on the Rio Grande, and Nogales in Arizona. From Laredo, 2,094 miles from New York, the Mexican National Road runs, via Monterey and other towns, to the City of Mexico, 840.4 miles. From Eagle Pass the Mexican International runs southwesterly, crossing the Mexican Central near Lerdo, to the mining town of Durango, 540.3 miles. The Mexican Central, starting at El Paso, extends southward through Chihuahua, Zacatecas, Aguas Calientes, and Querétaro to the City of Mexico, 1,224.1 miles. From Nogales the Sonora road proceeds, via Hermosillo, to Guaymas, 265 miles. From the City of Mexico southward there are railroads in operation as far as Oaxaca, 342.9 miles. The section remaining to

be built would extent from Oaxaca to Ayutla, 461 miles. Following the line via Laredo, the total distance from New York to Buenos Ayres, the most southern point aimed at, via the City of Mexico, Oaxaca, and Ayutla, Central America, etc., would be 10,228.06 miles, of which 4,771.93 miles have been constructed, leaving 5,456.13 miles to be built. The total cost is estimated at \$174,290,271.84. The largest amount to be expended in any one country is that allotted to Peru—over \$65,000,000; the next, Colombia, about \$33,700,000; Ecuador, nearly \$27,000,000; Mexico, \$14,752,000; Bolivia, \$12,000,000; the Argentine Republic, \$4,000,000. For building the necessary lines in Central America the estimate is about \$17,000,000. "It is highly probable," adds the report, "that future studies will reduce the length and lessen the cost stated."

ARGENTINE REPUBLIC.

Consul Baker sends from Buenos Ayres, February 8, 1897, the following returns of Argentine railways:

ARGENTINE RAILWAYS.

During the year just ended there were 314 kilometers (195 miles) of railway completed in the Argentine Republic, and during the year 1895 there were 84 kilometers (52 miles); so that there are now 14,536 kilometers (9,032 miles) of railway open to traffic. The official returns of the railways of the Argentine Republic are, however, complete only to December 31, 1895, and I give the figures, as follows:

Railways belonging to the nation.

Name.	Length in kilometers.	Capital.	Passengers carried.	Tons of cargo carried.	Gross receipts.	Net profits.
Line.....	254	\$6,689,511	22,652	176,638	\$249,052	\$90,559
Entre Rios.....	9	1,581,839	14,775	24,125	9,171	1,158
Northern Central.....	405	22,522,610	103,830	143,327	209,356	.....
San Funes and Patquia.....	299	10,227,207	10,622	10,743	49,027	.....
Cumbicha and Catamarca.....	66	2,832,130	9,569	4,528	13,335	.....
Total.....	1,033	42,426,297	161,448	359,361	529,941	64,153

The net loss of the Northern Central was \$2,534; of the Dean Funes and Patquia, 98, and of the Cumbicha and Catamarca, \$6,532.

Private railways guaranteed by the nation.

Name.	Length in kilometers.	Capital.	Passengers carried.	Tons of cargo carried.	Gross receipts.	Net profits.
Line.....	685	\$23,759,946	378,034	360,850	\$1,487,096	\$646,630
Line Great Western.....	513	18,925,200	125,925	168,832	1,151,718	620,371
Line Sanaria and Rufino.....	227	5,750,479	14,422	19,323	59,041	.....
Line Southern Argentine.....	286	1,942,605	3,413	2,905	9,675	.....
Line Argentine.....	161	5,155,938	23,120	71,511	190,930	53,689
Line Eastern Argentine.....	386	22,831,845	28,179	51,250	93,419	.....
Line Cordoba.....	121	4,893,840	6,791	855	32,853	.....
Line San J. and Tucuman.....	669	12,116,000	74,364	273,261	433,501	43,594
Line Cordoba.....	885	21,000,000	149,335	546,804	1,066,322	397,805
Line San J. and Northwest.....	241	7,640,640	13,411	17,116	105,266	3,843
Total.....	3,920	124,016,493	81,116,994	1,512,237	4,630,826	1,635,040

The net loss of the Villa Maria and Rufino Road was \$21,351; of the Northwestern Argentine, \$3,774; of the Northeastern Argentine, \$35,334, and of the Transandine, \$68,233.

Private railways not guaranteed.

Name.	Length in kilometers.	Capital.	Passengers carried.	Tons of cargo carried.	Gross receipts.	Net profits.
Buenos Ayres Southern	2,257	\$78,285,967	2,641,036	1,080,231	\$6,036,719	\$3,792,476
Buenos Ayres Western	687	51,746,411	2,480,640	1,224,448	3,251,377	1,955,150
Buenos Ayres and Rosario	1,490	44,182,318	2,116,646	939,282	3,251,222	1,601,836
Central Argentine	1,272	53,746,878	3,345,387	1,510,700	3,903,044	1,301,089
Buenos Ayres and Ensenada	194	12,324,575	1,896,725	664,930	950,453	450,416
Santa Fe and Cordova Southern	302	7,068,080	96,726	166,171	430,755	209,372
Chubut Central	70	1,008,000	604	6,482	18,596	10,334
Total	6,272	248,360,229	12,572,785	5,592,544	17,842,099	9,803,279

Provincial railways.

Name.	Length in kilometers.	Capital.	Passengers carried.	Tons of cargo carried.	Gross receipts.	Net profits.
Western Santa Fe	212	\$9,994,414	128,412	208,406	\$466,314	\$200,836
Entre Rios	613	16,174,000	115,260	172,742	316,345	37,238
Northwestern Argentine	188	3,709,704	294,977	619,737	413,871	189,150
Santafacino	1,308	29,250,720	283,000	435,739	1,173,703	210,816
Central Cordoba	209	5,040,000	68,364	302,723	444,624	243,467
Cordoba and Rosario	287	10,164,046	62,705	325,363	591,166	266,542
Cordoba and Northwestern	153	6,618,528	40,312	20,017	48,579	522
Cordoba and Malagueno	26	240,000	.....	64,932	.....	.....
Total	2,996	81,152,012	1,003,030	2,149,599	3,454,602	1,148,579
Grand total	14,222	498,076,031	14,554,257	9,614,041	26,557,468	12,651,031

The actual distribution of the railways of the Republic through the different provinces is as follows:

Province of—	Kilo-	Miles.	Province of—	Kilo-	Miles.
	meters.			meters.	
Buenos Ayres	4,862	2,720	Tucuman	602	374
San Luis	331	205	Jujuy	51	31
Santa Fe	3,319	2,057	Rioja	153	95
San Juan	83	51	Mendoza	373	231
Entre Rios	717	445	Territory of La Pampa	104	64
Santiago	1,047	650	Territory of Chubut	71	44
Corrientes	397	265	Capital of Buenos Ayres	72	45
Cordova	1,922	1,193	Total	14,222	8,837
Salta	262	162			
Catamarca	362	224			

PROGRESS OF RAILWAY BUILDING.

As a matter perhaps of some interest to railway men, I append the following table, which shows the progress, year by year, which railroad construction has made in the Argentine Republic since 1857, when the first rail was laid :

Year.	Number of kilometers.	Capital.	Year.	Number of kilometers.	Capital.
1857.....	10	\$285, 108	1877.....	2, 262	\$49, 847, 329
1858.....	18	450, 300	1878.....	2, 262	59, 491, 480
1859.....	23	578, 480	1879.....	2, 262	60, 814, 152
1860.....	39	741, 033	1880.....	2, 313	62, 964, 486
1861.....	39	785, 080	1881.....	2, 442	63, 772, 226
1862.....	47	1, 117, 536	1882.....	2, 666	65, 672, 510
1863.....	61	1, 340, 130	1883.....	3, 123	81, 155, 696
1864.....	94	1, 747, 700	1884.....	3, 728	93, 794, 912
1865.....	203	5, 379, 808	1885.....	4, 541	122, 643, 671
1866.....	514	12, 176, 462	1886.....	5, 964	148, 610, 909
1867.....	572	13, 592, 831	1887.....	6, 868	177, 797, 625
1868.....	572	14, 863, 904	1888.....	7, 644	197, 518, 973
1869.....	604	16, 027, 057	1889.....	8, 013	249, 907, 796
1870.....	732	18, 835, 703	1890.....	9, 254	346, 493, 054
1871.....	852	20, 983, 582	1891.....	11, 700	373, 580, 225
1872.....	965	23, 958, 488	1892.....	12, 920	399, 152, 801
1873.....	1, 104	30, 653, 587	1893.....	13, 961	436, 422, 437
1874.....	1, 249	40, 090, 359	1894.....	14, 029	461, 865, 464
1875.....	1, 384	40, 990, 210	1895.....	14, 222	498, 076, 081
1876.....	1, 665	49, 534, 826			

TRANS-ANDINE RAILWAY.

I have nothing to say in reference to the progress of the work of the way over the Andes, a work in which all the world has more interest than in all the rest of the railways of both Chile and the Argentine Republic. Indeed, there is nothing to be said. The work is at a standstill for the want of funds, and these must be of a very substantial character, as the gap remaining to be closed embraces some very heavy engineering and the construction of several exceedingly expensive tunnels. The gap is only about 25 miles—about seven hours on mule track.

RAILWAY TO NEUQUEN.

The Argentine Government is just now lending its aid in behalf of a railway which is at least of national interest. I refer to the road which is to run from Bahia Blanca to Neuquen, and for which the Great Southern Railway of Buenos Ayres has, under favorable conditions, accepted the contract. Neuquen is a strategic point on the frontier adjacent to Chile, and to extend a railway thither it is thought will not only be an element of government, settle or resolve many of the political questions which now are exciting both sides of the Andes, but will be a powerful lever of civilization in carrying into the far interior deserts agriculture and industry and commerce. This road to Neuquen goes 310 miles to the foot of the Cordilleras, and it will open up thousands of acres of fertile "camp" in the regions at the confluence of the Limay with the Neuquen, where there are now neither cattle nor agriculture. The contract for this railway was signed on the 21st of August last, and many miles of the roadbed are already in condition to lay the rails.

Vice-Consul Chute, of Buenos Ayres, on October 11, 1897, gives the following table of mileage:

Railway.	Miles open.
Central Argentine.....	79
Ensenada and Brandzen Branch.....	128
Buenos Ayres Great Southern.....	1 469
Buenos Ayres and Rosario.....	914
Buenos Ayres and Pacific.....	426
Buenos Ayres Western.....	495
Santa Fe and Cordova Great Southern.....	136
Bahia Blanca and Northwestern.....	234
Northwestern Argentine.....	94
East Argentine.....	99
Entre Rios.....	286
Central Uruguay.....	581
Cordova and Northwestern.....	95
Central Cordova.....	128
Central Cordova and Central Northern.....	548
Cordova and Rosario.....	180
Argentine Great Western.....	319
Total miles.....	7,078

TELEGRAPHS.

Consul Mayer writes from Buenos Ayres, October 29, 1898:

The length of telegraph wire throughout the Republic on July 1, 1898, was 18,531 kilometers (11,514 miles); 38 new offices were opened and 2 offices closed during 1897.

COASTWISE AND INTERIOR TRANSPORTATION.

In his report above referred to, Consul Baker adds:

All the Territories of Patagonia are in communication with Buenos Ayres by means of Government transports, which make semimonthly trips down the coast, stopping with mails and supplies at the various ports, and with accommodations for a limited number of passengers. The service might be greatly improved, but even so, it is a great accommodation to the people of those isolated districts. And now it appears that the Argentine Government is preparing to lay a cable which will connect this city with all that southern coast.

The navigation of Rio Negro is also in prospect, as the Argentine admiralty is now organizing a transport service between the town of Carmen de Patagones and the confluence of the Limay and Rio Negro. The principal object is to afford cheap and regular communication for the settlements along the banks of that river and for the military post at the foot of the Andes. The whole distance is 500 miles. The scheme is feasible, though there are a number of places which steamers will have trouble in passing, and at some seasons the river is very shallow. Of course, the steamers will be small and will be accompanied by barges.

FOREIGN COMMUNICATION.

In a report dated February 3, 1898, the chargé d'affaires at Buenos Ayres, Mr. Jones, gives the following information:

The lines of steamers now regularly plying between New York and Buenos Ayres are the Norton Line and the Prince Line, both British companies. The Norton Line makes direct bimonthly passages from New York to Montevideo and Buenos Ayres, without touching at Brazilian ports on the outgoing voyage. The vessels of the Prince Line, which are cargo boats with accommodations for a limited number of passengers, make bimonthly voyages between the above-mentioned terminals and call on their northward route at Santos, Rio, Bahia, and Pernambuco. The fastest vessels of these two lines average twenty-eight days in making the voyage.

The Lamport & Holt Company, which is also British, runs a freight steamer once every month between New York and Buenos Ayres. The regular passenger steam-

ers of this line go no farther south than Rio, and transfer their passengers for Buenos Ayres to the several European lines touching at Rio en route to Buenos Ayres. In addition to these, there is also a trimonthly steamship service between New York and Para. The carrying capacity of these latter vessels is 1,500 to 2,000 tons, which frequently proves inadequate, and freight, in consequence, is left on the dock, and cargoes are subjected to ten days' delay.

The average time made by the Lamport & Holt vessels between New York and Rio is about twenty-two to twenty-three days. Add to this the four days' voyage from Rio to Buenos Ayres by the fastest vessels calling at Rio from European ports, and the total time consumed, not including any delay that may be incurred in making connections at Rio, is from twenty-seven to twenty-eight days between New York and Buenos Ayres.

The freight rates of the chief articles of export and import are:

From and to—	Articles.	Freight rates.
Buenos Ayres to Rio de Janeiro.	Cereals	\$2.19 to \$3.65 per ton.
	Hay	\$2 to \$2.50 per 40 cubic feet.
	Dried beef	\$4 per ton.
Buenos Ayres to Bahia	do	\$6 per ton.
Buenos Ayres to Pernambuco	do	\$7 per ton.
Buenos Ayres to New York	do	\$5 per ton and \$4 per 40 cubic feet.
Rio de Janeiro to Bahia	Coffee!	35 to 42 cents per bag ² and 5 per cent primage.
Rio de Janeiro to Pernambuco	do!	49 to 56 cents per bag and 5 per cent primage.
Rio de Janeiro to Para	do!	70 to 80 cents per bag and 5 per cent primage.
Rio de Janeiro to New York	do	35 cents per bag.
Bahia to New York	do	Do.
Pernambuco to Para	Sugar	\$3.65 per ton.
	do!	8½ cents per 15 kilograms (33 pounds).
Pernambuco to New York	Rum!	\$4.38 per pipe and 10 per cent primage.
Para to New York	Sugar	\$2.40 to \$3.65 per ton.
New York to Pernambuco	Rubber	\$8 per ton; 25 cents per cubic foot.
New York to Bahia	General freight	30 cents per cubic foot and 10 per cent primage.
New York to Rio de Janeiro	do	41 cents per cubic foot and 10 per cent primage.
	do	30 cents per cubic foot and 10 per cent primage.

¹ Amounts given in milreis and reduced to American money at the rate of 14 cents per milreis, the latest official value.

² Bags of 132 pounds.

Passenger rates may be stated as follows:

Lines.	Routes.	Distance.	Class.		
			First.	Second.	Third.
		<i>Miles.</i>			
Lamport & Holt	New York to Rio de Janeiro		\$150		\$50
	New York to Buenos Ayres		175		60
Norton	do		180		
Prince	do		160		
Not named (trimonthly)	New York to Para		100		
	Para to New York		90		
Royal Mail Steam Packet Company.	Buenos Ayres to Montevideo	125	8		
	Buenos Ayres to Rio de Janeiro	1,171	50	\$30	15
	Buenos Ayres to Bahia	1,916	80	50	30
	Buenos Ayres to Pernambuco	2,310	90	50	30
	Buenos Ayres to Southampton	6,374	\$175 to 200	100	50
Pacific Steam Navigation Company.	Buenos Ayres to Montevideo	125	8		
	Buenos Ayres to Rio de Janeiro	1,171	50	30	15
	Buenos Ayres to Bahia	1,916	80	40	25
	Buenos Ayres to Pernambuco	2,310	90	40	30
	Buenos Ayres to Liverpool	6,225	175	85	45
Compagnie des Messageries Maritimes.	Buenos Ayres to Montevideo	125	6 to 8	5	4
	Buenos Ayres to Rio de Janeiro	1,171	38 to 56	25	16
	Buenos Ayres to Bahia	1,916	75 to 110	40	30
	Buenos Ayres to Pernambuco	2,310	90 to 120	45	35
	Buenos Ayres to Bordeaux	6,225	140 to 200	80	50
North German Lloyd ¹	Buenos Ayres to Montevideo	125	10		5
	Buenos Ayres to Bremen	6,818	150		45
Hamburg-Südamerikanische Dampfschiffahrts-Gesellschaft.	Buenos Ayres to Rio de Janeiro	1,171	40		12
	Buenos Ayres to Bahia	1,916	60		30
	Buenos Ayres to Hamburg	6,920	150		46

¹ The North German Lloyd rarely stops at Brazilian ports.

OCEAN FREIGHT RATES AND ARGENTINE TRADE.

The Department has received the following, dated Buenos Ayres, January 18, 1899, from Minister Buchanan:

My observation leads me to feel sure that many low-priced staples used in quantities here come from Great Britain and not from us, wholly because of the difference in freight rates between the two countries and this.

It is to be remembered that there are numbers of ships sailing between here and England and the Continent, and that the larger part of the traffic is from this country outward. This being true, it is easily seen that rates from England or the Continent to this country are more tractable and amenable to negotiation than are those from New York, where there are few ships engaged in the trade, and those owned and operated, with one exception, by companies having the bulk of their fleets engaged in the traffic between this country and England or the Continent.

Until this phase of the question is carefully studied, one fails to realize the great influence on our staple trade by our dependence upon foreign shipping interests.

For instance, a barrel of lubricating oil costs in New York \$3.12. The freight hither is \$2.64 and the duty \$5.10 in Argentine gold. Is it not remarkable, under such conditions, that we have as large a trade here as we have? Again, a barrel of gas oil costs in New York \$2.62½. The freight is \$2.64; the duty nothing. Under such a freight rate, it is easily seen that a difference of only 5 or 10 cents a barrel would be sufficient to turn the trade from us to any country where the cost price of the article was the same as our own.

I think we should give this subject especial attention, as I am sure that orders for staple goods, especially for machinery and steel products, have gone and will continue to go to England and Europe, not because the goods can be purchased cheaper there than in the United States, but because the advantages our country offers in the original cost of such goods are more than offset by the difference existing against us in the freight rates from New York to this city and those from English or European ports.

For instance, I know of one shipment from England of an 11-ton boiler in pieces. The freight thereon was £11 10s., or, say, \$55 in United States gold, or \$5 per ton. The same importing firm received from the United States a 33-ton boiler of the same kind as the other and in pieces. The freight thereon was \$750 in United States gold, or \$23 per ton, a difference of \$18 gold per ton in favor of the English manufacture. The freight on the shipment from England was calculated by weight, while that on the shipment from United States was computed by measurement.

These importers tell me they can buy such boilers and much heavy machinery and steel products very much cheaper in the United States than they can in England, but that they are obliged to buy them in the latter market, because the difference against us in freight is so great that it much more than offsets the difference in our favor on their first cost.

Without citing, as I could, other specific cases, let me say that the statement has been made to me by many importers here that the three lines operating ships between New York and the River Plata maintain at New York a close freight-rate understanding, and that the arbitrary and stiff rates thus held in force for River Plata freight undoubtedly injures our trade with these countries in many instances, and will continue to do so.

The reasons underlying this condition of things are, I think, apparent to anyone who has given the subject any consideration. Briefly, they appear to be the following:

First. That the great bulk of all River Plata products find their market in Great Britain or Europe, and hence shipping from those countries finds "return cargo." When there are large quantities of wheat, wool, and cattle to be moved, competition in rates to this country is certain between companies engaged in operating ships

between here and the Old World. On the other hand, when the crops fail here, rates to this country advance, because of the consequent lack of "return cargo."

During the past two years, and largely as a result of our tariff on wool, our purchases here have notably decreased in volume, whereas our shipments hither have increased; so that now there is nothing like sufficient return cargo for all the ships reaching here from New York. As a result, such ships either load to Rio de Janeiro with cattle, picking up here such through New York freight as they can find and then completing their load with coffee, or they go in ballast to a Brazilian port, where they can find a cargo for New York or Boston.

It is therefore plain why freight rates from New York are arbitrary, high, and unelastic and why they will probably remain so.

Second. With possibly one exception, all the steamship companies plying ships between the United States and this country maintain the larger portion of their ships in the traffic existing between England and here. They are therefore able not only to maintain stiff outward rates from New York by means of such an understanding as they are said to have, but also to manipulate their ships as the demands of outgoing Argentine traffic may make necessary, or as may seem desirable from their point of view.

The remedy for this state of things is not easy to point out. It must, however, not be found by our people, since it is not to be supposed that we will allow our trade with these countries and with others to be jeopardized and held in check by our lack of capacity to grapple with and solve the chief difficulty in our path, as well as one of the most important problems we have before us as a people—the creation and rapid building up of a United States merchant marine.

BRAZIL.

RAILWAYS.

The railways open to traffic and under construction on December 31, 1913, were:

Railways.	Open to traffic.		In course of construction.	
	Kilometers.	Miles.	Kilometers.	Miles.
Government lines	2,190	1,382		
Contracted lines (subject to Government inspection) ..	3,912	2,430	5,953	3,699
of subventioned	1,593	990	619	384
operated by the State	5,246	3,260	1,416	880
Total	13,941	8,662	7,988	4,963

Of the first class, or railways belonging to the Federal Government, the total extension of 3,190 kilometers (1,982 miles) represents an effective capital of 324,733,121 milreis (\$45,462,637),¹ divided as follows:

Lines.	Mileage open to traffic.		Capital.	
	Kilometers.	Miles.	Milreis.	
Central of Brazil	1,217	758	178,978,486	\$25,056,984
Sobral	215	134	9,323,328	1,306,526
Baturite	287	166	14,387,941	2,014,876
Sao Francisco	451	280	20,410,045	2,857,406
Central of Pernambuco	179	112	32,520,352	4,603,285
Paulo Affonso	116	69	6,821,449	955,003
Porto Alegre to Uruguay	458	285	27,432,449	3,840,543
Rio de Oro	87	54	2,465,020	345,192
Unaccounted for by the consul	200	124	31,385,051	4,393,907
Total	3,190	1,982	324,733,121	45,462,637

At the end of 1896, the Central of Brazil possessed 327 locomotives, 3 more than in the previous year; 233 of 1.60 meters (5.25 feet) and 94 of 1 meter (3.27 feet) gauge. There is a branch to Mariana from Ouro Preto. There was a deficit at the end of the year (1896). The service on the Sobral line last year was performed with 5 locomotives. There was a deficit at the end of the year. There was also a deficit in the revenues of the Baturite line, on which 23 locomotives did the work of traction. The Pernambuco line shows a deficit also; work done by 22 locomotives. Paulo Affonso, deficit. Service on the Sao Francisco performed by 30 locomotives. During the year (1896) 5 Baldwin locomotives were added, making the number owned by the company on December 31, 1896, 39, of which 38 are of American and 1 of French construction. There was a deficit at the end of the year. The Puerto Alegre line shows an excess of receipts over expenditures. The work was done by 135 locomotives.

The railways subventioned by Federal Government are: Barao de Araruama, Caxias a Cajazerias, do Conded'Eu, de Minas e Rio, Mogyana, Norte do Brazil, do Norte, Ouro Preto a Peçanha, Peçanha, ao Araxa, Petrolina ao Piahy, Cruzeiro a Santo Cruz, Rio Grande a Bage, Cachoeiro de Itaperim, de Santos a Jundiahy, Sorocobana e Ituana, Taubate ao Amparo, do Tijuca, Victoria a Peçanha.

Estrada de Alcabaça a Praia Ranha (Alcabaça-Praia Rainha Railroad).—Total extension, 184 kilometers (113 miles); enjoys a 6 per cent guaranty on a maximum of 30,000 milreis (\$4,200) per kilometer (0.6214 mile).

Extrada de Ferro Caxias ao Araguaya (Caxias-Arraguay Railroad).—Extension, 183 kilometers (114 miles); projected mileage, 567 kilometers

¹In the United States Treasury valuations, as printed in the introductory statements to Consular Reports, Brazil is entered with the gold-standard nations and the milreis valued at 54.6 cents. While gold is the nominal standard of Brazil, paper money is the real standard, and this fluctuates in value. In a note from Consul Hill, transmitting this report on the railways of that Republic, the paper milreis is quoted at 14 cents, and the values throughout the report have been reduced in the Bureau of Foreign Commerce at this rate, save where amounts are given in gold.

(352 miles); total, 750 kilometers (466 miles); same guaranty as the previous line.

Estrada de Ferro Caxiasa São Juré de Cayazeiras (Caxias-São Juré Cayazeiras Railroad).—Open to traffic, 78 kilometers (48 miles); same guaranty as the two preceding lines; the line possesses 4 locomotives.

Estrada de Ferro Petralina ao Piahy (Petralina Piahy Railroad).—Extension, 102 kilometers (63 miles); projected extension, 898 kilometers (558 miles); guaranty similar to preceding lines.

Estrada de Ferro Natal a Nova Cruz (Natal-Nova Cruz Railroad).—Open to traffic, 121 kilometers (75 miles); guaranty, 7 per cent on a capital of 5,496,053 milreis (\$769,447). This company has 12 locomotives; deficit at end of year.

Estrada de Ferro Conde d'Eu (Conde d'Eu Railroad).—Open to traffic, 41 kilometers (88 miles); enjoys a guaranty of 74 per cent on a capital of 6,000,000 milreis, gold (\$3,270,000), and 6 per cent on £69,273 3337,083; owns 13 locomotives.

Estrada de Ferro Nazareth ao Crato (Nazareth-Crato Railroad).—Extension, with studies approved, 120 kilometers (74 miles); extension studied (branch Bom Jardim), 69 kilometers (42 miles); to be studied (approximate), 461 kilometers (287 miles); total, 650 kilometers (404 miles); guaranty, 6 per cent on a capital of 30,000 milreis (\$4,200) per kilometer (0.6214 mile).

Estrada de Ferro Recife ao Limoeiro (Recife-Limoeira Railroad).—Open to traffic, 83 kilometers (52 miles); from Carpina to Nazareth, 13 kilometers (9.4 miles); from Nazareth to Timbanba, 45 kilometers (28 miles); total, 141 kilometers (89.4 miles); enjoys a guaranty of 7 per cent on a capital of 5,000,000 milreis (\$700,000), expended in the construction of the principal line and the branch to Nazareth; has no guaranty on the capital employed in the prolongation of the branch from Nazareth to Timbanba; concessionaire, the Great Western Brazil Railroad Company. During the year there were 22 locomotives in service.

Estrada de Ferro Recife ao São Francisco (Recife-São Francisco Railroad).—Open to traffic, 125 kilometers (78 miles); enjoys a guaranty of 5 per cent on a capital of 7,111,111 milreis (\$995,555), and 5 per cent on a total of \$4,316,978 milreis (\$604,377); concessionaire, the Recife and São Francisco Railway Company, Limited; service, 18 locomotives. Receipts in 1896 were 2,253,184 milreis (\$315,446); expenses, 2,277 milreis (\$282,002); profits, 232,457 milreis (\$32,544).

Estrada de Ferro Ribeirão ao Bointo (Ribeirão-Bointo Railroad).—Open to traffic, 26 kilometers (16 miles); extension under construction, with studies approved, 35 kilometers (22 miles); total, 61 kilometers (38 miles); enjoys a guaranty of 6 per cent on a capital of 30,000 milreis (\$4,200) per kilometer (0.6214 mile).

Estrada de Ferro Tamandaré a Barra (Tamandaré-Barra Railroad).—Open to traffic, with studies approved, 136 kilometers (85 miles), from Tamandaré to Barra de Jangada; from Barra Velha to Palmares, 33 kilometers (20½ miles); to be studied, 112 kilometers (70 miles); enjoys a

guaranty of 6 per cent on a capital of \$30,000 milreis (\$4,200) per kilometer on the lines from Tamandaré to the Socorro colony, and from Barra Velha to Palmares. The prolongation from Palmares to São Bento does not enjoy a guaranty; concessionaire, a *Campanhia Estradas de Ferro Norte do Brazil* (Northern Brazil Railway Company).

Estrada de Ferro Central de Alagoas (Central Alagoas Railroad).—Open to traffic, 88 kilometers (55 miles), principal line and Assembléa branch, 62 kilometers (39 miles); enjoys a guaranty of 7 per cent on a capital of 4,553,000 milreis gold (\$2,385,938), and 6 per cent on 1,860,000 milreis paper (\$260,400).

Estrada de Ferro Central Alagoana (Central Alagoana Railroad).—Open to traffic, with studies approved, 194 kilometers (121 miles); to be studied, 401 kilometers (249 miles); total, 595 kilometers (310 miles); enjoys a guaranty of 6 per cent on a capital of 30,000 milreis (\$4,200) per kilometer (0.6214 mile); concessionaire, a *Companhia Estrada de Ferro Central Alagoana* (Central Alagoana Railway Company).

Estrada de Ferro Aracáju a Simão Dias (Aracáju-Simão Dias Railroad).—Extension, under construction, 86 kilometers (53 miles); studied or under study, 108 kilometers (67.1 miles); total, 194 kilometers (120 miles); enjoys a guaranty of 6 per cent on a capital of 30,000 milreis (\$4,200) per kilometer (0.6214 mile).

Estrada de Ferro Bahia a Alagoinhas (Bahia Alagoinhas Railroad).—Open to traffic, 123 kilometers (76 miles); enjoys a guaranty of 6 per cent on a capital of 30,000 milreis (\$4,200) per kilometer; concessionaires, the *Campanhia Estradas de Ferro do Norte do Brazil* (Northern Brazil Railway Company), and the *Brazilian and São Francisco Railway Company, Limited*; service performed by 17 locomotives. Timbo branch: Open to traffic, 83 kilometers (52 miles); enjoys a guaranty of 6 per cent on a capital of 2,650,000 milreis gold (\$1,446,900); concessionaire, the *Timbo Branch Railway Company, Limited*.

Estrada do Ferro Central do Bahia (Bahia Central Railroad).—Open to traffic, 312 kilometers (194 miles); studied, 300 kilometers (186 miles); total 613 kilometers (380 miles); enjoys a guaranty of 7 per cent on a capital of 13,000 milreis gold (\$7,098) per kilometer (0.6214 mile) on the line open to traffic, and 6 per cent paper on the line studied, up to 30,000 milreis (\$4,200) per kilometer; concessionaire, the *Brazilian Central Bahia Railway Company, Limited*; service performed by 18 locomotives; receipts (1896), 1,165,871 milreis (\$163,222); expenses, 1,034,751 milreis (\$144,865); excess, 131,120 milreis (\$18,357).

Tram Road, Nazareth.—Open to traffic, state concession, 34 kilometers (21 miles); federal concession, 65 kilometers (40 miles); total, 99 kilometers (61 miles). Concessionaire, a *Companhia Tram Road de Nazareth* (Nazareth Tramway Company).

Estrada de Ferro Victoria a Peçanha (Victoria-Peçanha Railroad).—Extension, under construction, 84 kilometers (52 miles); with studies approved, 423 kilometers (263 miles); total, 507 kilometers (315 miles);

enjoys a guaranty of 6 per cent on a capital of 30,000 milreis (\$4,200) per kilometer (0.6214 mile); concessionaire, a Companhia Estrada de Ferro Bahia e Minas (Bahia and Minas Railway Company).

Estrada de Ferro São Eduardo ao Cachoeira do Itapemirim (São Eduardo-Cachoeira do Itapemirim Railroad).—Open to traffic, 39 kilometers (24 miles); under construction, 51 kilometers (32 miles); total, 90 kilometers (56 miles); concessionaire, a Companhia Estrada de Ferro Leopoldina (Leopoldina Railway Company). There was a deficit of 120,773 milreis (\$16,908) at end of year.

Estrada do Ferro do Carangola (Carangola Railroad).—Open to traffic, 224 kilometers (139 miles); enjoys a guaranty of 7 per cent on a capital of 6,000,000 milreis, 3,700,000 thereof being gold (\$2,342,000); concessionaire, a Companhia Estrada de Ferro Leopoldina (Leopoldina Railway Company); service performed by 14 locomotives; deficit at end of year, 187,958 milreis (\$26,314).

Estrada de Ferro Barão de Araruama (Barão de Araruama Railroad).—Extension, 46 kilometers (29 miles); under construction, 6 kilometers (3.7 miles); total, 52 kilometers (32 miles); enjoys a guaranty of 6 per cent on a capital of 30,000 milreis (\$4,200) per kilometer; service performed by 3 locomotives.

Estrada de Ferro Central de Macahé (Makahé Central Railroad).—Open to traffic, 43 kilometers (27 miles); under construction, 15 kilometers (9 miles); total, 57 kilometers (36 miles); enjoys a guaranty of 6 per cent on a capital of 30,000 milreis (\$4,200) per kilometer (0.6214 mile); concessionaire, a Companhia Industria, Laboura e Viação de Macahé (Makahé Industry, Labor, and Transport Company). Service performed by 3 locomotives; deficit at end of year, 95,597 milreis (\$13,383).

Estrada de Ferro do Norte (Northern Railway).—Open to traffic, 45 kilometers (28 miles); to be studied, 75 kilometers (47 miles); total, 120 kilometers (75 miles); does not enjoy a guaranty; concessionaire, Companhia do Rio de Janeiro and Northern Railway Company, Limited; the company has 3 locomotives.

Estrada de Ferro São Francisco Xavier ao Commercio (São Francisco Xavier-Commercio Railroad).—Open to traffic, 16 kilometers (10 miles). Peçanha branch, 3 kilometers (1.9 miles); under construction, 49 kilometers (30 miles); total, 68 kilometers (41.9 miles); no guaranty; concessionaire, Empresa Industrial de Melharamentos do Brasil (Brazilian Industrial Enterprise of Melharamentos). The gauge is 1 meter (39 inches); 3 locomotives.

Estrada de Ferro Leopoldina (Leopoldina Railroad).—Open to traffic, 248 kilometers (154 miles); no guaranty; concessionaire, a Companhia Estrada de Ferro Leopoldina (Leopoldina Railway Company). Service performed by 48 locomotives.

Estrada de Ferro Peçanha ao Aroxá (Peçanha-Aroxá Railroad).—Under construction, with studies approved, 887 kilometers (551 miles); enjoys a guaranty of 6 per cent on 30,000 milreis (\$4,200) per kilometer (0.6214 mile); concessionaire, a Companhia Estrada de Ferro Peçanha ao Aroxá (Peçanha-Aroxá Railway Company).

Estrada de Ferro Barra Mause a Catalão (Barra Mause-Catalão Railway).—Extension, 122 kilometers (76 miles); under construction, 528 kilometers (328 miles); under study, 791 kilometers (492 miles); guaranty, 6 per cent on 30,000 milreis (\$4,200) per kilometer (0.6214 mile); concessionaire, a Companhia Estrada de Ferro Oeste de Minas (Minas Western Railroad Company). The 122 kilometers (76 miles) open to traffic showed a deficit during the first semester of 1896 of 15,361 milreis (\$2,151).

Estrada de Ferro Minas e Rio (Minas and Rio Railroad).—Open to traffic, 170 kilometers (106 miles); guaranty, 7 per cent on a capital of 15,495,253 milreis (\$2,169,335); concessionaire, the Minas and Rio Railway Company, Limited; owns 23 locomotives; in 1896 the receipts were 1,774,466 milreis (\$248,425); expenditures, 1,656,961 milreis (\$231,957); profits, 117,505 milreis (\$16,450).

Estrada de Ferro Muzambinho (Muzambinho Railroad).—Open to traffic, 57 kilometers (31½ miles); no guaranty; concessionaire, a Companhia Estrada de Ferro Muzambinho (Muzambinho Railway Company); the Campanha branch of this line has 86 kilometers (53½ miles) open to traffic, on which there is a guaranty of 4 per cent; capital, 2,509,500 milreis (\$351,330); deficit in 1896.

Estrada de Ferro Santos a Jundiáhy (Santos-Jundiáhy Railroad).—Open to traffic, 139 kilometers (86 miles); renounced its guaranty in 1889; concessionaire, the São Paulo Railway Company, Limited. By a decree of the ministry at Rio, dated September 3, 1896, the final plans for the duplication of the line were approved, and the capital destined for that purpose was fixed at £2,000,000 (\$14,112,850). During the first six months of 1896 43,232 trains ran between points on the line with 375,496 carriages, during which time 15,588,656 kilograms (15,587 tons) of coal and coke were consumed, while 558,523 passengers were carried, of whom 167,993 were first class and 390,530 second; there were transported, in metric tons (2,204 pounds), baggage, 7,178 tons; merchandise, 536,301 tons (imports, 399,265 tons; exports, 137,036 tons); immigrants, from Santos to São Paulo, 31,758; from São Paulo to the interior by the São Paulo Railway, 46,939. During the first six months of 1896 the receipts were 7,830,477 milreis (\$1,096,267); expenditures, 4,326,313 milreis (\$605,684); profit, 3,504,164 milreis (\$490,580). The detailed account of receipts and expenditures in the second six months of 1896 were:

Receipts.

From—	Amount.	
	Milreis.	Dollars.
Passengers	1,363,292	190,861
Baggage and express	320,519	44,873
Animals on passenger trains	17,991	2,519
Animals on freight trains	4,978	687
Merchandise	10,402,344	1,456,489
Telegraph	39,913	5,587
Storage and fines	34,072	4,779
Sundries	79,426	11,118
Total	12,262,535	1,716,886

Expenditures.

For—	Amount.	
	<i>Milreis.</i>	<i>Dollars.</i>
Superintendence.....	50,188	7,026
Office expenses.....	40,235	5,033
Taxes.....	33,815	4,784
Traffic.....	1,735,928	243,130
Traction.....	1,702,067	238,269
Rolling stock.....	424,105	59,375
Telegraph.....	93,903	13,147
Repairs on line.....	1,129,493	158,129
Central bureau of accounts.....	22,173	8,104
Sundries.....	69,566	9,739
Difference in exchange.....	745,927	48,302
Total.....	5,647,700	970,608

Estrada de Ferro Mogyana (Mogyana Railroad).—This is the other great coffee-carrying road of the State of São Paulo. Open to traffic, 194 kilometers (121 miles); Caldas branch, 77 kilometers (48 miles); guaranty, 6 per cent on a capital of 4,300,000 milreis gold (\$2,347,800) and 1,853,885 milreis paper (\$259,540); it has 11 locomotives, made by Sharp, Stewart & Co.; 12 passenger coaches, constructed in the shops of the company; and 108 wagons, of which 60 are covered, of a capacity of 7 tons each, made by the company. Eighteen are of English make and 30 were made by the Companhia Industrial Constructora de Rio de Janeiro (Rio de Janeiro Industrial Construction Company). There were transported in 1896: First-class passengers, 59,809; second-class passengers, 164,858; baggage and express, 2,402 tons; merchandise, 1,276 tons; animals on passenger trains, 4,896; animals on freight trains, 391; receipts in 1896 were 2,098,355 milreis (\$293,770); expenses, 723,316 milreis (\$241,264); profits, 375,038 milreis (\$52,506). Details receipts and expenditures were as follows:

Receipts.

From—	Amount.	
	<i>Milreis.</i>	<i>Dollars.</i>
Passengers.....	616,274	86,279
Baggage and express.....	114,067	16,095
Fares on passenger trains.....	19,435	2,721
Telegraph.....	19,401	2,716
Merchandise.....	1,286,573	180,121
Animals on freight trains.....	7,900	1,114
Freight.....	0,258	876
Interest.....	14,258	1,196
Others.....	13,229	1,852
Total.....	2,098,355	293,770

Expenditures.

For—	Amount.	
	<i>Milreis.</i>	<i>Dollars.</i>
Office.....	43,746	6,124
.....	226,262	31,677
.....	810,628	113,487
.....	44,225	6,192
Out way.....	586,294	82,081
.....	12,161	1,705
Total.....	1,723,316	241,264

There was a profit realized on this line in 1895 of 307,115 milreis (\$44,961), but deficits existed in 1892, 1893, and 1894.

Estrada de Ferro Sarocahana (Sarocahana Railroad).—Open to traffic, main line, 113 kilometers (70 miles); Itararé branch, 43 kilometers (27 miles); guaranty, 6 per cent on a capital of 30,000 milreis (\$4,200) per kilometer (0.6214 mile) on the line from Botucatú to Tibagy and the Itararé branch; the prolongation to Santos enjoys no guaranty; concessionaire, a Companhia União Sarocahana e Ituana (Sarocahana and Ituana Union Company). There were carried: First-class passengers, 8,126; second-class passengers, 20,405; baggage and express, 252 tons; merchandise, 9,011 tons; animals on freight trains, 6,106; animals on passenger trains, 584. Merchandise: Coffee, bacon, tobacco, alimentary substances, sugar, salt, sundries. The Itararé branch carried merchandise to the amount of 6,856 tons, of which 217 tons were coffee. The receipts on the prolongation to Tibagy were 140,831 milreis (\$19,716); expenses, 130,849 milreis (\$18,319); profit, 9,982 milreis (\$1,397). The Itararé branch had receipts to the amount of 117,212 milreis (\$16,410), and expenses, 105,537 milreis (\$14,775); profit, 11,675 milreis (\$1,635).

Estrada de Ferro Uheraha ao Coxim (Uheraha-Coxim Railroad).—Extension, with studies approved, 103 kilometers (64 miles); to be studied, 897 kilometers (556 miles); total, 1,000 kilometers (620 miles); guaranty, 6 per cent on 30,000 milreis (\$4,200) per kilometer; concessionaire, O Banco União de São Paulo (São Paulo Union Bank).

Estrada de Catalão a Palmas (Catalão-Palmas Railroad).—Extension, approximate, 800 kilometers (597 miles); studies approved, 100 kilometers (62 miles); to be studied, 700 kilometers (445 miles); guaranty, 6 per cent on 30,000 milreis (\$4,200) per kilometer (0.6214); concessionaire, a Companhia Estrada de Ferro Alto Tocantins (Alto Tocantins Railroad Company).

Estrada de Ferro do Paraná (Paraná Railway).—Open to traffic (Paranaguá to Curitiba), 111 kilometers (69 miles); prolongation and branches, 306 kilometers (189 miles); total, 417 kilometers (258 miles); guaranty, 7 per cent per annum on a capital of 11,492,043 milreis (\$1,608,894) on the line from Paranaguá to Curitiba, and 6 per cent per annum on a capital of 9,179,855 milreis (\$1,285,180), corresponding to a maximum guaranty of 30,000 milreis (\$4,200) per kilometer (0.6214 mile), on an extension of 306 kilometers (189 miles); concessionaire, Companhia Generale de Chemins de Fer Brésiliens (Brazilian General Railway Company); receipts on the line from Paranaguá to Curitiba in 1896 were 1,968,724 milreis (\$275,621); expenditures, 1,043,726 milreis (\$146,127); profits, 924,962 milreis (\$129,894). This is a prosperous road, there having been large annual profits since 1891. The work of traction was done by 16 locomotives.

Estrada de Ferro Santa Maria a Cruz Alta (Santa Maria-Cruz Alta Railroad).—Open to traffic, 161 kilometers (100 miles); concessionaire,

Compagnie des Chemins de Fer Sud-Ouest Brésiliens (Brazilian Southwest Railway Company); guaranty, 5 per cent on a capital of 4,828,035 milreis (\$675,925); receipts, 383,378 milreis (\$53,673); expenditures, 366,274 milreis (\$51,278); profits, 17,104 milreis (\$2,395).

Estrada de Ferro Santa Maria ao Uruguay (Santa Maria-Uruguay Railroad).—Part under construction, Cruz Alta ao Uruguay (Cruz Alta to Uruguay, 381 kilometers (237 miles); Ijuhy branch, 293 kilometers (182 miles); guaranty, 6 per cent on 30,000 milreis (\$4,200) per kilometer (0.6214 mile); concessionaire, Compagnie de Chemins de Fer Sud-Ouest Brésiliens (Brazilian Southwest Railway Company).

Estrada de Ferro Quarahim a Itaqui (Quarahim-Itaqui Railroad).—Open to traffic, 176 kilometers (110 miles); guaranty, 6 per cent on capital of 6,000,000 milreis (\$840,000); concessionaire, the Brazil Great Southern Railway Company, Limited; receipts, 199,434 milreis (\$25,121); expenditures, 323,301 milreis (\$45,262); deficit, 143,866 milreis (\$20,141).

Estrada de Ferro Rio Grande a Bagé (Rio Grande-Bagé Railroad).—Open to traffic, 283 kilometers (176 miles); guaranty, 7 per cent on capital of 13,521,453 milreis (\$1,893,003); concessionaire, the Southern Brazilian Rio Grande do Sul Company, Limited; receipts, 1,269,993 milreis (\$177,799); expenditures, 1,267,654 milreis (\$177,471); profit, 2,339 milreis (\$328).

Estrada de Ferro São Paulo-Rio Grande (São Paulo-Rio Grande Railroad).—Extension, with studies approved, 1,092 kilometers (678½ miles); to be studied, 775 kilometers (482 miles); total, 1,867 kilometers (1,160½ miles); guaranty, 6 per cent on 30,000 milreis (\$4,200) per kilometer (0.6214 mile); concessionaire, a Companhia São Paulo-Rio Grande (São Paulo-Rio Grande Railway Company); 2 locomotives.

Estrada de Ferro Minas de São Jeronymo (São Jeronymo Mines Railroad).—Under construction, 40 kilometers (25 miles); studies approved, 149 kilometers (92½ miles); studied, 375 kilometers (233 miles); total, 564 kilometers (350½ miles); concessionaire, a Companhia Estrada de Ferro e Minas de São Jeronymo (São Jeronymo Railway and Mining Company).

Estrada de Ferro Pelotas ao Colonias São Laurenço (Pelotas-São Lourenço Colonies Railroad).—Extension, with studies approved, 154 kilometers (96 miles); guaranty, 6 per cent on 30,000 milreis (\$4,200) per kilometer; concessionaire, a Empresa Industrial e Constructora do Rio Grande do Sul (Rio Grande do Sul Industrial and Construction Company).

FRANK D. HILL, *Consul.*

SANTOS, December 20, 1897.

RAILROAD IN PARANA.¹

The only road open to traffic in the State of Parana is that owned by the Compagnie Générale de Chemins de fer Brésiliens. It has a total length of 416.995 kilometers (259.12 miles), of which 111 kilometers (68.97 miles) belong to the mountain division (from Paranaguá to Curitiba) and 305.995 kilometers (190.15 miles) to the camp division (from Curitiba to Ponta-Grossa, with branches from Restinga Secca to Porto-Amazonas and Serrinha to Rio Negro). The track has a width of 1 meter (39.37 inches).

On the mountain division 82,441 tons of merchandise were transported last year, as follows:

Articles.	Quantity.	Articles.	Quantity.
	<i>Tons.</i>		<i>Tons.</i>
Yerba maté.....	23, 788	Cereals.....	4, 208
Lumber and wood.....	8, 381	Sugar.....	4, 048
Flour.....	5, 542	Coffee.....	295
Salt.....	5, 013		

On the camp division, in a total of 67,559 tons transported, the distribution was:

Articles.	Quantity.	Articles.	Quantity.
	<i>Tons.</i>		<i>Tons.</i>
Yerba maté.....	25, 521	Cereals.....	2, 583
Lumber and wood.....	9, 749	Sugar.....	1, 907
Flour.....	3, 265	Coffee.....	330
Salt.....	4, 364		

Coffee came nearly all from Santos, while Rio sent only a very small quantity. The coffee grown in the northern part of the State, on the Rio Parana-Panema, and in the adjoining zone of the State of São Paulo, was brought to the nearest localities on mule back.

No special mention has been made in the company's annual report about the quantity of manufactured goods transported, though they certainly represent over one-half of the goods given as "sundries," which represented in the mountain division 25,962 tons and in the camp division 17,054 tons. Of imported goods, 26,326 tons came through the ports of Antonina and Paranaguá.

The movement of passengers has been as follows:

Mountain division:		
First class.....		19, 527
Second class.....		55, 401
Camp division:		
First class.....		14, 150
Second class.....		37, 180

¹ Transmitted by Consul-General Seeger, of Rio de Janeiro, in an undated dispatch, received by the Department November 1, 1898.

The weight of luggage belonging to these passengers was 605 tons (mountain division) and 365 tons (camp division).

The total receipts were:

	Milreis.
Mountain division	1,726,933.678 = ¹ \$208,958.97
Camp division	1,525,779.569 = 184,619.32

Against these receipts, the expenses amounted to 1,036,324.010 milreïs (\$125,395.20) for the mountain division, and 1,011,743.635 milreïs (\$122,419.98) for the camp division.

This gives a surplus of 690,609.668 milreïs (\$83,563.77) for the mountain division, and 514,035.934 milreïs (\$62,198.35) for the camp division; together, 1,204,645.602 milreïs (\$145,762.12).

It is not easy to ascertain exactly the amount of capital employed in the construction of the road. The Brazilian Government has guaranteed an interest of 7 per cent for the mountain road on a capital of 11,492,042.707 milreïs, or 32,500,000 francs (\$6,272,500), and of 6 per cent for the camp road on a capital of 9,179,855.100 milreïs, or 26,000,000 francs (\$5,018,000). This interest, though, has never been reached; so that the Government has been obliged to pay heavy sums to cover the interest guaranteed. The value of the milreïs having averaged during the last year only 63 centimes (12.1 cents), while its value at par is given at 2.83 francs (54.5 cents), the capital guaranteed gave only, on the mountain division, an interest of 1.3 per cent, and on the camp division of 1.2 per cent. It is well to add that never has exchange been so low as in the last year; but, on the other hand, since the opening of the road (in 1888) it has never reached its original figure.

STEAMSHIP COMMUNICATION WITH RIO DE JANEIRO.

Consul-General Seeger sends from Rio de Janeiro, under date of September 16, 1898, the following list of steamship lines calling at Rio:

Steamship lines.	Nationality.	Head office.	Time of sailing.	Destination.
Lampoirt & Holt	British	Liverpool.....	Fortnightly ..	New York and New Orleans.
Prince	do	Newcastle-on-Tyne.....	do	New York.
Norton	do	Liverpool.....	do	Do.
Slovan	German	Hamburg.....	Monthly.....	Do.
Chargeurs-Reunis	French	Havre.....	do	New Orleans.
<i>Coast lines.</i>				
Lloyd Brasileiro	Brazilian ...	Rio de Janeiro.....	Weekly.....	Northern and southern ports of Brazil.
Navegação Costeira Lago Irmãos	do	do	do	Do.
Esperança Marítima	do	do	do	Do.
Espirito Santece de Navegação a vapor	do	do	do	Do.
Companhia Pernambucana de Navegação	do	Recife	do	Do.
São Ivaõ da Barra e Campos	do	São Ivaõ da Barra	do	Do.
Viação do Brazil	do	Rio de Janeiro.....	do	River San Francisco and tributaries.

¹ Taking the exchange value of the milreïs at 12.1 cents.

The above companies, says Mr. Seeger, do not issue freight lists, owing to the continual changes in rates.

The steamship lines to and from the United States have formed a trust and adopted a uniform schedule of freight for the transportation of coffee from Santos and Rio to the United States. Until recently, continued the consul-general, they charged 40 cents per bag of 60 kilos (110 pounds), then they reduced their rate to 15 cents, and since the middle of September their freight rate is 10 cents per bag of 60 kilos.

COMMUNICATION WITH PARA.

There are four steamship lines that place Para in constant and rapid communication with the United States and Europe, besides several Brazilian lines that are engaged in the coasting trade. Two of the lines are British, one Italian, and the other is Portuguese. The Red Cross Line and the Booth Steamship Line, Limited, are both of Liverpool, though each has a branch office at New York. Their combined fleets, I am advised, number something near forty cargo and passenger vessels. The steamers start from Liverpool, calling at Hamburg and Havre, Oporto, Lisbon, Madeira, Para, and Manaos, stopping at the same ports on the way back, with the exception of Oporto, Havre, and Hamburg. The call at Havre, I understand, depends on cargo, and Hamburg is not touched on the return voyage, as there is very little cargo for that port from Para and Manaos. The British companies have also established regular lines from Manaos and Para to New York and back, by way of Barbados. These two lines do all the carrying trade between the United States and northern Brazil. Both lines have been established for over thirty years. Neither is in any way subsidized, as I understand, and if they have obtained the greatest share of the carrying trade, it has been the result of untiring energy, perseverance, and excellent management.

The Ligure Brasileira Line of Italian steamers possesses three modern steamers that ply between Genoa, Lisbon, Para, and Manaos, calling at Spanish ports on the way. This line receives a subsidy from the States of Para and Amazonas. The Portuguese line belongs to the firm of Andressen & Co., of Oporto, and consists of two or three vessels.

The fare from Europe is only \$50, while that from New York to Para is \$90. The difference is due to the fact that considerable more competition is in force between here and Europe. The fare from here to Manaos is \$20, and the fare from Para to Iquitos, Peru, a distance up the Amazon of nearly 3,000 miles, is \$45.

As already stated, the New York lines are about to provide increased carrying facilities. I have it from a reliable source that five new steamers, with a capacity of 3,000 tons each, will shortly be added to the present fleet.

The French line of steamers, the Messageries Maritimes, is about to

establish a line from here to the River Plate, taking in Rio, Montevideo, and Buenos Ayres. This commences to operate next month.

The Para Braganca Railway was built to encourage agriculture in the neighborhood of Para, but as Brazilians prefer to collect rubber, and immigrants follow their example, the result is that agriculture is abandoned and the railway is said not to be paying. The length of the road is seventy-odd miles.

A concession has been granted a foreign company to build a railroad between Alcobaca and Para da Rainha. The object is to establish communication on the Tocantins and Araguaya rivers, over the stretch which is obstructed by about 100 miles of rapids.

The Amazon Cable Company has established cable communication with all the principal ports of the rivers of the State. The line to Iauaos is one of great importance. The commercial development of Iauaos depends upon it to a considerable extent.

The steamship lines running between here and New York advertise to leave Para on the 4th, 14th, and 24th of every month, but, unfortunately, they often fail to leave on schedule time.

The rate of freight from Para to New York is 25 cents per cubic foot, as I am informed by merchants, about 17 per cent less than it is here to Europe.

K. K. KENNEDAY, *Consul*.

PARA, October 13, 1898.

IMPROVED STEAMSHIP SERVICE.

Consul Kennedy, under date of October 13, 1899, writes:

Beginning in November, 1899, the two lines of steamships plying between this and the United States—the Booth Steamship Company, Limited, and the Cross Line of steamers—have changed their schedule so as to leave Para for New York on the 6th, 16th, and 26th, instead of the 4th, 14th, and 24th of each month. Commencing next month, a ten-days' service will be established by said lines between Manaus and New York. On the 1st of November, 1899, a ten-days' service will also be established between here and Galveston, Tex., by the same lines that are now operating between Para and New York. The Spanish Steamship Company, established between Havana, Cuba, and Europe, has sent an agent here to make complete arrangements for the extension of this line, to touch at Para on the voyages to Europe.

FREIGHT RATES FROM SANTOS: CABLE COMMUNICATION.

Consul Hill writes from Santos, September 2, 1897:

Freight rates to foreign ports are as follows:

Destination.	January to September.	October to December.	Weight.
.....	25 shillings and 5 per cent.	30 shillings and 5 per cent.	Per 1,000 kilos. ¹
.....	do	do	Do.
.....	do	do	Do.
.....	25 francs and 10 per cent.	30 francs and 10 per cent.	Per 900 kilos. ²
.....	do	do	Do.
.....	30 francs and 10 per cent.	40 francs and 10 per cent.	Per 1,000 kilos. ¹
.....	do	do	Do.
.....	do	do	Do.
.....	30 francs and 5 per cent.	do	Do.
.....	20 cents and 5 per cent.	40 cents and 5 per cent.	Bags of 60 kilos (132 pounds).

¹ Tons of 2,204.6 pounds.

² Tons of 2,000 pounds.

Cable communication is maintained by four lines: (1) Western and Brazilian Telegraphic Company, Limited; (2) South American Company, to Dakar, via the island of Fernando de Noronha; (3) Central and South American Cable Company, via Buenos Ayres, Valparaiso, and Galveston; (4) French line, from Visan to Cayenne, Martinique, etc., to the United States.

RIVER NAVIGATION IN SAO PAULO.

Consul Hill says further:

There exists in the State of Sao Paulo river navigation of 976 kilometers (602 miles), to which the following companies contribute: Companhia Paulista de vias Ferreas e Fluviaes, 200 kilometers (124 miles), river Mogy-Guasen from Porto Ferreira to Puntal; the Companhia Sorocabana e Ytuana, 220 kilometers (74½ miles), on the Piracicaba, from Joao Alfredo to the confluence of the Tietê; the Companhia sul Paulista de Navegacao e Mineracao, 356 kilometers (221 miles), on the Ribeira, Una, Jacupiranga, and Juquiá.

BRITISH GUIANA.

FOREIGN TRANSPORTATION.

The Dutch line has increased its fleet plying between Paramaribo and New York, via West Indian ports. A vessel leaves Paramaribo twice a month. The Royal English mail visits the port every two weeks, with connections at Barbados for New York, Europe, and West Indies. The French mail calls once a month from Demerara and the Islands. A Government steamer plies between Paramaribo and Demerara, leaving Paramaribo Monday and returning Friday of each week, carrying mails, cargo, and passengers.

Transportation companies.

Name.	From—	To—	Sailing.
Armstrong Line.....	New York.....	Demerara, via West India Islands ..	Fortnightly.
Quebec Line.....	do.....	do.....	Do.
Royal Mail.....	Southampton.....	Demerara, via West India Islands and Paramaribo.	Do.
French Mail.....	Fort de France.....	Demerara, Paramaribo, and Cayenne.	Monthly.
Pickford and Black Canadian Line.....	St. John, New Brunswick.	Demerara, via West India Islands ..	Do.
Royal Dutch Mail.....	New York.....	Demerara, via Trinidad and Paramaribo.	Fortnightly.
Direct Line.....	London.....	Demerara, via Trinidad ..	Do.
Do.....	Glasgow.....	do.....	Every three weeks.
Demerara and Berbice Line.....	do.....	do.....	Fortnightly.
Liverpool Line.....	Liverpool.....	Demerara ..	Monthly.
Burrell Line.....	London and Glasgow.	Demerara, via Trinidad and Barbados.	Do.

GEO. H. MOULTON,
Consul.

DEMERARA, September 30, 1898.

FREIGHTS—INTERIOR COMMUNICATION.

In a report dated September 12, 1896, Consul Patterson says:

Freight rates to the United States are very reasonable. Average time about ten days by direct steamer.

Practically, the entire settlements in this colony being on the coast and on the rivers, nearly all colonial travel up to the present time has been accomplished by a system of colonial steamers sailing from this place to the different points in the colony. There are 16 of these steamers, and it is very easy to reach any of these places. There is only one line of railway in the colony, from here to Mahaica, a distance of 20 miles along the coast.

Mail wagons connect with steamers at some points on the coast for the purpose of carrying mail and passengers to places not touched by steamers.

Communication with the interior of the colony is by rowboats that may be carrying miners.

RAILROADS.

On October 7, 1897, Mr. Patterson writes:

During the past year, a line of railroad about 18 miles long, connecting the Essequibo and Demerara rivers, has been opened to traffic. An extension of the Demerara Railroad is now under construction. This is a coast line, and will connect Georgetown and New Amsterdam and Georgetown and Plantation Philadelphia. Its whole length will be about 60 miles. While this road is built by the company, the interest on its stock is guaranteed by the Government.

Under date of October 10, 1899, Consul Moulton reports that 15 miles of the road have been finished, at a cost of \$24,000 per mile. A survey for a railroad into the gold regions has been made by private capital.

CHILE.

Consul Dobbs, of Valparaiso, on February 4, 1897, writes:

The State lines of railway in operation have a total length of close upon 1,100 miles, and there are in course of construction 215 miles. There are also private lines, mostly owned by English companies, measuring 938 miles. There are 25,000 miles of public roads and 2,875 miles of waterway, the latter all in the south.

There is constant and direct steamship communication along the Chilean coast and with the west coast generally as far as Panama and Central America. The steamers to Panama connect with lines to New York and Europe, and to Mexico and San Francisco via the Straits of Magellan there is frequent and regular steamship communication with the east coast, the United States, and Europe. Besides this, there is a considerable trade carried on in sailing vessels with the United States.

The length of voyage by steam to and from the United States via Panama is reckoned at one month, and by sail around Cape Horn two and one-half to three months.

Consul Merriam, of Iquique, on October 31, 1898, adds that steamers of the Kosmos Line, from Hamburg to Guayaquil, touch at Iquique and other principal ports on the west coast twice each month.

SAN FRANCISCO-VALPARAISO STEAMSHIP LINE.

As of possible importance to the shipping and commercial interests of the United States, I have the honor to inform the Department of projected fast steamship line between the cities of Valparaiso and San Francisco.

The Compañía Sud Americana de Vapores, a line flying the Chilean flag, but owned principally by English capitalists, and now doing business between Valparaiso and Panama, has submitted a proposition to the Pacific Steam Navigation Company, an English company competing in the same waters, to conjointly extend the service of the lines to San Francisco.

The results hoped to be accomplished by this action, if taken, are (1) Active and profitable competition with American lines for the freight-carrying business of the Central American States, Mexico, and the Pacific coast of the United States, (2) and rapid, comfortable and safe passage to intercontinental passenger travel. Under the proposed schedule a steamer will leave Valparaiso once a week, touching at the intermediate ports of Coquimbo, Antofagasta, Iquique, Molendo, and Callao, reaching Panama in ten days. From Panama north the steamer will stop at only the principal ports of Mexico and Central America, reaching San Francisco in twelve days from the date of departure from Panama, thus occupying twenty-two days in the entire trip from Valparaiso to San Francisco.

The Compañía Sud Americana de Vapores is a powerful and wealthy corporation, which has for many years been earning large profits from the freight and passenger business on the southern Pacific coast. The Pacific Steam Navigation Company is an even more powerful corporation, entirely controlled at present by British capital. Both companies are subsidized by the Chilean Government.

I am informed that the proposition of the Compañía Sud Americana de Vapores to the Pacific Steam Navigation Company to establish this line will probably be accepted, and that the inauguration of the new line may be expected in the month of January, 1898.¹

While the extension of the operations of these companies to San Francisco—affording thereby facilities for rapid and easy communication with these countries—will doubtless be a source of satisfaction to the shipping and commercial interests of the United States, at the same time it is to be regretted that the carrying trade of the west coast of North and South America should be in any hands other than those of the American merchant marine.

HENRY L. WILSON,
Minister.

SANTIAGO, November 12, 1897.

¹ Under date of November 26, 1898, Minister Dudley, of Lima, reports the inauguration of the service. The lines will extend their voyages, on a joint schedule, as far north as Ocos, Guatemala, and, if the prospect be encouraging, to ports in the Gulf of California and San Francisco. Boats will run every ten days.

LOCAL TRANSPORTATION—TELEGRAPHS.

Consul Caples says, under date of October 26, 1898:

On State railways the rates are exceedingly cheap; the Government suffers considerable losses every year through hauling goods over the track. The revenue never equals the expenditure; but the theory is that if the Government loses the nation gains.

The rivers of Chile are little better than small mountain streams. The Valdivia is navigable by small steamers of 10-foot draft from the mouth to the town of Valdivia (only a few miles). The Rivers Imperial, Bueno, and Maule have dangerous bars, upon which small steamers of 10-foot draft are often lost; farther south there are rivers, such as the Palena, which are not frequented, as there is no commerce or industries of any kind in their vicinity—nothing but thick, rank, and apparently impenetrable forests.

The State telegraph line runs from Iquique (north) to Port Montt and Ancud (south); messages are extremely cheap. Several private lines run from Valparaiso to Santiago.

COLOMBIA.

RAILWAYS.

Consul Shaw writes from Barranquilla, January 30, 1899:

There are about 389 miles of railroad in operation in Colombia:

The Santa Marta Railroad Company (English), from Santa Marta to Sevilla, 46 miles; proposed extension to Heredia, on the Magdalena River, 80 miles from Barranquilla.

The Barranquilla Railway and Pier Company (English), from Barranquilla to Puerto Colombia, 17½ miles, connected with steel pier 4,000 feet long, extending into 26 feet of water.

In another part of his report, Mr. Shaw says:

“Owing to the dangerous navigation at the mouth of the river, no ocean steamers and but few sailing vessels come to Barranquilla. Although the name of Sabanilla, the former port (now entirely abandoned), is erroneously retained on many of the charts of this coast and continues to be used by the shipping, the actual seaport is Puerto Colombia, a distance of 17½ miles from this city and connected with it by railroad. The Barranquilla Railway and Pier Company, although an English corporation, has purchased much of its rolling stock in the United States, and has recently bought there two fine new Baldwin locomotives, two passenger cars, and several freight cars, made by Jackson & Sharp, of Wilmington, Del. The road is 3-foot 6-inch gauge, and furnished with 60-pound steel rails (English and American), laid on creosoted ties from the United States. During the year ended December 31, 1898, the company handled 61,917 tons of freight and carried 59,468 passengers. Freight rates are charged by this company according to class of merchandise. The unit of measure is a “carga,” which is one-eighth of a ton. In computing bulk freight, a cubic meter, 40 feet, is treated as a ton. Import freight is divided into four classes, numbered fourth, fifth, sixth, and seventh. The fourth class pays 7.04 pesos, equal to about \$2.18 United States gold, and includes hardware, boots and shoes, hats and caps, furniture, dry goods and notions, drugs and medicines, wines, liquors, and beer, groceries and canned goods, glassware, machinery, and turpentine; for the latter 50 per cent is added. The fifth class pays 4.56 pesos, equal to about \$1.38 United States gold, per ton, and includes rice, sugar, flour and meal, onions, beans, lard, ice, apples fresh or dried, potatoes, salt, iron, steel, and lead in bars and sheets,

The Cartagena and Magdalena River Railway¹ (American), 65 miles, from Calamar to Cartagena.

The Panama Railway Company (American), 47 miles, from Pauama to Colon.

The Antioquia Railway Company, owned by the State of Antioquia, built from Puerto Berrio, on the Magdalena River, to Caracoli, a distance of 50 miles; proposed extension of 75 miles to Medellin.

La Dorada Railway Company (English), built from La Dorada to Honda and "Arranca Plumas," a distance of 22 miles; proposed extension of 35 miles to Cambao.

The Girardot Railway Company (Colombian), built from Girardot to Juntas de Apulo, a distance of 24 miles; proposed extension of 48 miles to Madrid, to connect with the Facatativa and Bogota Railway.

The Sabana Railway (Colombian), from Facatativa to Bogota, a distance of 24 miles.

The Cucuta Railway Company (Colombian), built from Cucuta to Puerto Villamizar, on the River Zulia, a distance of 34 miles; extension to Venezuelan frontier now in process of construction, with 2 miles already built.

The Northern Railway Company (Colombian), from Bogota to Zipaquira, a distance of 31 miles.

The Cauca Railway Company, now controlled by the State of Cauca, from Buenaventura to Apula, a distance of about 28½ miles; proposed extension to Cali.

During the last two years, a number of new railroads have been projected and concessions obtained from the Government, but only about 32 miles of road have been built. I am informed that no work has been done on the proposed railroad from the Magdalena River to Bucaramanga.²

RIVER STEAMBOATS.

The Magdalena River is navigable for steamboats for 779½ miles. Steamboats from Barranquilla ascend to La Dorada, a distance of 592½ miles. The altitude of La Dorada is about 600 feet above that of Barranquilla. Yeguas was formerly the head of navigation on the lower river, but steamers now go no higher than La Dorada. Here dangerous rapids are encountered, and passengers and freights for points on the upper river must be transferred by railroad a distance of 20 miles, to Arranca Plumas, a point about 1 mile above Honda. Above Arranca Plumas the river is navigable for small boats to Neiva, a distance of about 187 miles. The Cauca, Nechi, and Lebrija rivers, tributaries of the Magdalena, afford an additional 215 miles of navigation. On these rivers there are 42 steamboats, with a total tonnage of 7,331. They vary in size from 313 to 30 tons, and are operated by seven different companies. Broad, stern-wheel boats are used. The largest boats do not draw much over 3 feet

pipe or pig, copper and tin sheets, pans and plates, steel rails, chains, wire rope, anchors, boiler tubes, and asbestos. The sixth class pays 3.36 pesos, equal to about \$1.04 United States gold, per ton, and includes stearic acid and stearin, barbed wire, tiles, tow, iron kettles, coal, cement, rosin, galvanized or corrugated iron, sheet or other iron roofing, brick, zinc in sheets, porcelain crockery, lumber, mosaics, wicks, grindstones, filters, caustic soda, raw tallow, empty bags, bagging, woven wire, and raw materials for making glass or crockery. The seventh class pays 13.60 pesos, equal to about \$3.21 United States gold, per ton, and includes acids, alcohol, loaded cartridges, gun caps, miners' fuse, dynamite, powder, and other explosives. The minimum freight charge is 1 peso."

¹ Consul Madrigal writes from Cartagena, July 10, 1898:

"The Cartagena-Magdalena Railway Company has bought seven river steamers, with a total tonnage capacity or displacement of 950 tons. Two more are being built, with a capacity of 600 tons. It already owned three steamers of 700 tons, and will now, after the completion of the two steamers being built, have a tonnage capacity of about 2,250 tons, besides several tugs. Goods can now be shipped direct from this port to the company's warehouses at Honda, the port, La Dorada, being some 600 miles from here."

² See p. 885.

when loaded. The fuel used is wood. Rate of travel up river, about 2 leagues per hour; down river, about 4 leagues per hour. A number of the best and most satisfactory boats in use have been built in the United States. They were brought out in pieces and put up at Barranquilla. During the year 1898, these steamers carried passengers and freight to and from this port as follows:

Up river:	
Freight.....	tons.. 28,850
Passengers.....	8,119
Down river:	
Freight.....	tons.. 25,817
Passengers.....	8,410

Compared with the year 1897, the tonnage was 7,852 tons less for 1898. This tonnage does not include considerable river cargo destined for Cartagena, which is taken from steamers at Calamar, a point above Barranquilla, and transferred thence by rail 65 miles to the seaboard.

River steamboats leave Barranquilla on the 3d, 6th, 9th, 12th, 15th, 18th, 21st, 24th, 27th, and 30th of each month. Other boats also depart at irregular dates. Boats arrive regularly on the 3d, 9th, 15th, 21st, and 27th of each month.

Passage from Barranquilla to La Dorada—first class, 75 pesos (\$23.25); second class, 37 50 pesos (\$11.62); third class, 25 pesos (\$7.75).

From La Dorada to Barranquilla—first class, 50 pesos (\$15.50).

Passengers are allowed baggage as follows: First class, 150 kilos (330 pounds); second class, 75 kilos (165 pounds); third class, 50 kilos (110 pounds).

Freight up river, Barranquilla to La Dorada, 47 pesos (\$14.57) per ton of 1,000 kilos, or 1 cubic meter of bulk, at the option of the company. Rebates of from 60 to 20 per cent are allowed on certain classes of freight. As will be noted, passenger rates down river are much less than those charged going up. The down-river freight charges are also less.

PACK MULES.

Upon leaving the rivers, freight and passengers are transferred on the backs of mules. There are practically no wagon roads. The load (carga) for a mule is, for most of the routes, 250 pounds. Mules in the Medellin route take 300 pounds. In order that this may be properly balanced on the animal, it must be capable of an almost equal division into two parts. Passengers and freight for Bogota leave the river at Honda, and thence are carried by mules to Facatativa, a distance of 45 miles. The trip is made by passenger mules in two and one-half to three days. The charge for a passenger mule for this trip is 20 pesos (\$6.20). Passengers and freight for Medellin leave the river at Puerto Berrio. Bogota and Medellin, the principal interior cities, are reached from this coast as follows:

BOGOTA.—(ALTITUDE 8,985 FEET ABOVE SEA LEVEL.)

Route.	Miles.	Fare in Colombian currency.	Equivalent in United States gold.	Time.
		<i>Pesos.</i>		
Barranquilla to La Dorada.....	592½ by steamer....	75.00	\$23.25	8 to 9 days.
La Dorada to Honda.....	22 by rail.....	3.10	.96 ¹⁰⁰ / ₁₀₀	2 hours.
Honda to Facatativa.....	45 by mule.....	20.00	6.20	2 to 3 days.
Facatativa to Bogota.....	24 by rail.....	1.20	.37 ¹⁰⁰ / ₁₀₀	1½ hours.
Total.....	683½	99.30	30.78¹⁰⁰/₁₀₀	12 days 3½ hours.

MEDELLIN.

		<i>Pesos.</i>		
Barranquilla to Puerto Berrio.....	486 by steamer....	62.50	\$19.37	6 to 7 days.
Puerto Berrio to Caracoli.....	50 by rail.....	4.00	1.24	3 hours.
Caracoli to Medellin.....	84 by mule.....	12.00	3.72	1½ to 2 days.
Total.....	520	78.50	24.33	9 days 3¼ hours.

OCEAN STEAMSHIP LINES.

Nine lines of steamers, all carrying mail, passengers, and freight, touch regularly at Sabanilla (Puerto Colombia).

The Hamburg-American Packet Company (German): Three steamers each month from Hamburg; these touch at Havre, St. Thomas, La Guayra, Puerto Cabello, and Curaçao. Two also touch at Cartagena and one at Colon.

Compagnie Générale Transatlantique (French): Three steamers each month; one of these from St. Nazaire, one from Havre and Bordeaux, and one from Marseilles. These boats touch at several points in the West Indies and at Central and South American ports.

Royal Mail Steamship Packet Company (English): Two regular steamers each month from Southampton, touching at Cartagena, Colon, Kingston, Jacmel, and Barbados, returning via Cherbourg and Plymouth.

Atlas Steamship Company (English): One regular steamer each week from New York via Kingston, returning via Cartagena, Port Limon, and Kingston. Boats of this line also touch every two weeks at Greytown.

Prince Line, Limited (English): Two regular steamers each month, one from Genoa via Marseilles, Barcelona, Cadiz, and Trinidad, returning via Colon, Progreso, Vera Cruz, Tampico, and New Orleans, and another from Glasgow via Barbados, Trinidad, La Guayra, Puerto Cabello, and Kingston, returning via Port Limon, Vera Cruz, and New Orleans.

Transatlantica Española (Spanish): One regular steamer each month from New York via Havana, Santiago de Cuba, La Guayra, and Puerto Cabello, returning to New York via Cartagena, Colon, Santiago de Cuba, and Havana.

The Veloce (Italian): One regular steamer each month from Genoa via Barcelona, Santa Cruz de Teneriffe, Ponce, St. Thomas, La Guayra, Puerto Cabello, and Curaçao, returning via Cartagena, Sabanilla, and same ports as on outward trip, except Barcelona.

Harrison Line (English): One regular steamer each month from Liverpool via Barbados, Trinidad, La Guayra, Puerto Cabello, and Curaçao, returning via Cartagena, Galveston, or New Orleans.

West India and Pacific Steamship Company (English): Two regular steamers each month from Liverpool via Barbados, Trinidad, La Guayra, Puerto Cabello, and Curaçao, returning via Cartagena, Colon, and New Orleans.

Ocean freight and passenger rates between Sabanilla (Puerto Colombia) and European and American ports.

TO SABANILLA

From--	Time.	Freight per ton of 1,000 kilos (2,204.6 pounds).		Passen- ger rates first class United States gold.
		Rate.	Equivalent in United States gold.	
Southampton	24 days.	15 to 25 s.	\$3.06 to \$6.06	\$150.00
Hamburg	23 days.	30 to 35 s.	7.31 to 8.53	137.50
Havre	21 days.	47½ francs	9.09	137.50
Genoa	22 days.	27½ francs	5.23	115.80
Barcelona	20 days.	35 pesetas	6.75	135.45
New York	9 days.			75.00

Freight rates on the Atlas Line, not calculated per ton, are: Flour, 21 cents per 100 pounds; kerosene oil, 10 cents per 100 pounds; barbed wire, 25 cents per 100 pounds; general merchandise, 12 cents per cubic foot.

Ocean freight and passenger rates between Sabanilla (Puerto Colombia) and European and American ports—Continued.

FROM SABANILLA.

To—	Time.	Freight per ton of 1,000 kilos (2,204.6 pounds).		Passenger rates, first class, United States gold.
		Rate.	Equivalent in United States gold.	
Southampton	24 days	Coffee, £2 to £2 10s.	\$0.73 to \$10.95	\$150.00
Do	do	Hides, £3.	14.60	
Hamburg	23 days	Coffee, £2 to £2 10s.	9.73 to 10.95	137.50
Do	do	Hides, £3.	14.60	
Havre	21 days	Coffee, £2 to £2 10s.	9.73 to 10.95	137.50
Do	do	Hides, £3.	14.60	
Genoa	22 days	Coffee, 50 francs.	9.65	115.80
Do	do	Hides, 27 francs.	5.14	
Barcelona	20 days	Coffee, 100 pesetas.	19.30	135.45
New York ¹	14 days			75.00

¹ Freight rates in United States gold, not calculated per ton: Coffee, 40 cents per sack of 130 pounds; hides, 12 cents each; rubber, three-fourths of 1 cent a pound.

CABLE COMMUNICATION.

Consul Bidlake writes from Barranquilla, October 1, 1897:

Colon is the only port on the Atlantic coast of Colombia having communication by cable with the outside world. A message for the United States from this city would be sent first via Bogota to Buenaventura on the Pacific and thence to Colon. A message may take two days or a week; it depends upon the condition of the line in the interior. The manner generally preferred is to send the message to Colon by mail. Should the vessel be going directly, the message would take two days.

Consul Madrigal, of Cartagena, under date of October 21, 1898, gives the following rates of the Buenaventura cable station:

[Plus 20 per cent.]

To—	Colombian currency.	United States currency.
	<i>Per word.</i>	<i>Per word.</i>
United States	\$2.91	\$1.23
England, France, and Germany	3.40	1.43
Belgium and Sweden	3.61	1.52
Holland and Italy	3.67	1.54
Spain	3.87	1.63
Barcelona	3.82	1.61
Havana	3.64	1.54
Caracas	7.02	3.96
Curaçao	6.19	2.61

NEW RAILWAY.

In his report above referred to, Mr. Bidlake says further:

On June 23, 1897, a contract made between the government of the department of Santander and a Mr. Buckley (an American) was approved by the National Government. This contract provides for the building of a railroad from the Magdalena River to Bucaramanga. This work is divided into two sections, from the Lebrija

River to Bucaramanga, and from the Magdalena to the Lebrija. The contractor has six years in which to complete the road. The first section mentioned must be completed within five years, and the second half within the time specified, but the contractor may work on both lines simultaneously.

The Government grants the contractor 300 hectares (741 acres) of public lands for each kilometer (0.62137 mile) constructed, and guarantees for twenty years 6 per cent on the capital invested, up to \$28,500 per kilometer of the road, with its accessories.

The road will open a very rich portion of Colombia, and will be of untold benefit to the coffee planters.

COMMUNICATION WITH PANAMA.

Consul-General Gudger, in reports dated October 1, 1897, and October 11, 1898, says:

It is well known that the Panama Railroad runs from Panama to Colon, and is a great highway for the cargo from Europe and New York to the western coast of South America, and vice versa. There is a line of American steamships from San Francisco to Panama and two lines from Panama south to Valparaiso. On the Colon side there is an American line from New York and lines running to all parts of Europe.

Telegraphic communication has been extended to David, Santiago, Tonosi, Chome, and other local points in the Republic. Service between this port and San Francisco is carried on by the Pacific Mail and Steamship Company. It takes about twenty-five days to make the trip each way. From this place to New York via Panama Railroad Steamship Line it takes seven days each way.

PANAMA CANAL.

Consul-General Gudger, under date of November 3, 1897, sent a report on the progress of work on the Panama Canal, to connect the Atlantic and Pacific oceans by way of the Isthmus of Panama, in which he says:

The canal extends from Colon, on the Atlantic, to Panama, on the Pacific, the length being 54 miles. Work was actively begun in the year 1882. At times, and most of the time until the discontinuance of the work in 1889, there were at work no less than 10,000 laborers. The very best and latest machinery was used. This consisted in part of dredges, drills, engines, pumps, etc. Some of this machinery was well adapted to the work in hand, but a larger portion of it has never been used, and therefore its utility is not known. All along the canal line one can see vast sheds full of new and costly machinery, while in the river and ditches are large quantities of it. It is estimated that, from first to last, the company paid out for machinery \$100,000,000. It is also estimated that there has been expended on the work for material, officers, etc., \$275,000,000. It would be a conservative estimate to say that the canal is about one-third completed, and yet it is supposed that, with the machinery, etc., on hand, the rest of the work can be accomplished for \$150,000,000. The old company went into liquidation, and on its ruins a new company was organized and work begun in 1894. Since then there have been employed an average of about 3,000 laborers. The new incorporators, as were the old, are mostly Frenchmen. It is believed that, if work continues at all after this year, such a force will be placed on the works that it can be finished in from seven to ten years.

The canal is practically finished from Colon to Bujeo, 14 miles. This, however, is the least expensive part of the canal. The great trouble is in passing through the Culebra Ridge. At first it was thought there would be no need for locks, but this idea has been abandoned. The width of the canal will be 160 feet at the top and 72 feet at the bottom, except through the ridge, where it will be 78 feet at the top and 29 feet at the bottom.

In the river and harbor bill passed by the Fifty-fifth Congress, third session, 1899,¹ the President was authorized to make complete investigation as to the most feasible and practicable route across the Isthmus of Panama, particularly as regards the Nicaraguan and Panama routes, together with the cost of constructing the same and placing it under the control of the United States. One million dollars was appropriated for defraying the expenses of such investigation. The commission appointed by the President consisted of the following members: Rear-Admiral John G. Walker, U. S. N., retired; Hon. Samuel Pasco; Alfred Noble, C. E.; Mr. George S. Marison; Col. Peter C. Hains, Corps of Engineers, U. S. A.; William H. Burr, C. E.; Lieut. Col. Oswald H. Ernst, Corps of Engineers, U. S. A.; Lewis M. Haupt, C. E., and Prof. Emory R. Johnson.

ECUADOR.

Consul-General De Leon sends from Guayaquil, December 3, 1898,⁴ the following report relative to the Guayaquil and Quito Railroad of Ecuador:

The contract entered into June 14, 1897, between Mr. Archer Harman, of New York, on behalf of himself and associates, with the Ecuadorian Government, after much discussion and some opposition, was finally approved by the Congress of Ecuador at the session just ended.

The details of the contract have not been officially published, but I have obtained the following data: The road is to run from Duran, on the east bank of the Guayas River, opposite Guayaquil, to Quito, a distance of perhaps 350 miles. It is to be built by Messrs. Harman and associates for Government account. They are to receive therefor \$12,282,000 in first-mortgage bonds, secured by a lien on the customs revenues of the Republic; \$5,250,000 in 7 per cent preferred stock, and 51 per cent of the common stock. Six per cent interest and 1 per cent per annum amortization on the mortgage bonds is guaranteed by the Government, which, it is figured, will be retired in thirty-three years. The promoter of the enterprise is Mr. Archer Harman, a native of Virginia, now of New York. The president is Robert M. Thompson, *esq.* (president New York Metal Exchange); secretary, Charles H. Sherrell (lawyer); and Charles R. Lee (manager of United States Leather Company) is treasurer. Messrs. Dent, Palmer & Co., of London and New York, finance the enterprise, and it is stated that the entire sum necessary to build the road has been secured.

This railway will connect Quito, the capital, with Guayaquil, on the tidewater of the Pacific, and is to be, according to contract with the Government, 40-inch gauge with 50-pound rails. Of this line there now exists a 60-mile road of 92-centimeter gauge in operation between Duran, the terminal opposite Guayaquil and Chimbo bridge. The broadening of gauge, laying of new ties and rails, improving roadbed, and other work, I am assured, will amount to almost a new construction of this part of the line. This road traverses the low alluvial coast section, which lies between the Andes and the ocean, partially reclaimed and devoted to the cultivation of cane, coffee, rice, cacao, and other tropical products.

The end of the road is at the foot of the western cordillera of the Andes, at an elevation of 345 meters (1,130 feet) above sea level, and for the next 60 miles there is a rise to Sibambe, through the forest slopes of the mountains, to an altitude of

¹ See page 833.

2,481 meters (8,138 feet), a survey of which has been made during the last three years under the direction of Mr. J. V. S. Muller, an English engineer employed by the Ecuadorian Government. This is considered to be the most difficult part of the entire line, as the country is very abrupt and of andesite (an exceptionally hard rock formation, besides being side-hill forest, liable to landslides. This portion of the projected railway runs through a territory as yet undeveloped on account of lack of transportation facilities, but which will become, I am told, immensely valuable for coffee and other crops when work is completed.

From Sibambe north to Quito the road lies through the inter-Andean treeless plateau, so well known and of interest to geologists. No survey has as yet been made of this section, but it is known from barometrical measurements that the line will have to surmount three spurs of the Cordilleras, ranging from 10,000 to 12,200 feet elevation each; but aside from this, no grave engineering difficulties seem to be presented. The country constitutes a part of what is known as the Sierras of Ecuador, a series of mountain valleys (between alternate ridges), having a mean elevation of 8,000 feet above sea level, abounding in every type of production peculiar to the Temperate Zone, comparatively populous, enjoying a cool and bracing climate, and seemingly only awaiting the completion of this railway to become commercially the most important section of Ecuador. What progress can a country expect, be nature ever so bountiful, or population ever so dense and industrious, if separated from the outside world, as this section of Ecuador now is, by almost impassable mule trails, requiring ten or fifteen days to reach a market?

This is the work which is expected to be under construction within the next six months, to cost \$17,532,000 and to be completed within the next three or four years. Once completed, it will be a triumph of railway construction, as the country offers severe natural obstacles. Commercially, in opening up a region of wonderful fertility and agricultural wealth, the triumph will not be less marked.

At present, the Ecuador accessible to commerce is a low tropical coast, consisting of 19,725 square miles area, sparsely populated (242,000 inhabitants, Wolf's estimate), exporting principally cacao, rubber, hides, sugar, ivory nuts, and other tropical productions, but obliged to import almost every manufactured article and temperate-zone commodity needed for consumption. Meanwhile, the isolated part of Ecuador, which will be opened up by the projected railway, is an elevated plateau, of temperate and healthful climate, with an area of 20,680 square miles, comparatively populous and inhabited by an industrious people.

The parties in interest claim the railroad will pay almost from the start, and show their faith by putting their millions into it. The present short railroad traverses the large and wealthy province of Guayas (6,180 square miles), but owing to the magnificent fluvial system in the coast section, it does not enjoy the carrying trade of more than one-tenth of the area. The four provinces to be traversed by the railroad are Chimborazo, Pichincha, Leon, and Tunguragua. Those contiguous are Bolivar, Imbabura, and Cañar, containing, according to Wolf, a population of 715,000 (?), having no mode of ingress or egress save by costly mule carriage. The denser population and greater fertility of the section which will be opened warrant the assumption that the traffic will be, proportionately, considerably larger than that enjoyed by the Duran and Chimbo road, and induces the belief that in a very brief period the earnings of the line will pay running expenses and perhaps something on common stock; that it will eventually be a dividend earner is, in my opinion, assured. The construction of the road will inaugurate, as stated, a new era in Ecuador; few lands are so remarkably fertile and teem with such agricultural wealth, both tropical and temperate. The disbursements for labor alone, it is stated, will cost the construction company \$10,000,000 or more, gold. As the enterprise is essentially American there will be an influx of Americans and closer relations with the United States, which should, and doubtless will, enjoy the lion's share of the commerce of the west coast of Central and South America as soon as we build an isthmian canal.

OCEAN TRANSPORTATION.

Vice-Consul-General Reinberg, under date of Guayaquil, September 24, 1898, says:

Before and since the Spanish-American war, the Panama Steamship Company has endeavored to give a weekly service from New York to Colon, instead of three times a month, as formerly. If this service is maintained, the advantage for American commerce is apparent.

Since the expiration of a contract with the Pacific Mail Steamship Company, the Pacific Steam Navigation Company and the Campañia Sud-Americano de Vapores, which hitherto have plied between Panama and South American ports, declared that they would extend their service as far north as San Francisco. It is reasonably supposed that if they adopt this aggressive measure, the Pacific Mail Steamship Company will retaliate by extending traffic south of Panama. In such event, there will be great benefit conferred on the entire west coast.

PARAGUAY.

The Central Paraguayan Railway has 41 coaches, 158 cars, and 15 engines.

Passengers carried from November 1, 1896, to October 31, 1897.

Months.	First class.	Second class.	Third class.	Months.	First class.	Second class.	Third class.
November	1,854	1,737	39,098	June.....	1,770	1,554	35,585
December	2,638	2,399	45,607	July.....	1,962	1,555	37,022
January	2,311	1,799	40,575	August.....	2,279	1,726	40,465
February.....	1,872	1,866	39,239	September.....	2,093	1,774	38,770
March.....	1,904	1,882	47,574	October.....	2,832	2,102	44,291
April.....	1,901	1,597	39,270				
May.....	2,079	1,733	41,129	Total.....	25,496	21,714	489,526

Merchandise carried by the railroad.

Article.	1896.		1897.			
	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Woods.....	2,716	3,047	2,567	2,323	3,317	2,454
Brick, etc.....	1,219	1,211	1,176	1,027	1,302	1,246
Lime, Portland.....	33	80	37	35	26	41
Tobacco.....	63	56	72	41	48	151
Fuel.....	102	122	103	117	147	103
Timber.....		181	140	98	186	118
Corn, etc.....	79	203	87	106	110	125
Skins.....	321	322	327	243	318	204
Wool.....	306	237	296	298	242	283
Liquids.....	100	95	122	114	89	86
Salt.....	111	100	127	162	147	68
Yerba (tea).....	133	142	125	66	72	19
Hay.....		17	39	27		47
Lucerne.....	120	130	141	134	50	47
Starch, etc.....	105	113	200	178	220	94
Awning.....	16	22	15	73	69	59
Oranges.....	338	341	15		2	23
Wire and zinc.....	31	26	12		36	59
Exports, general.....	10	9	15	26	14	7
Articles not classified.....	95	87	88	107	103	115
Total.....	6,059	6,401	5,748	5,175	6,585	5,354
Packages.....	9,286	8,081	7,176	7,415	7,946	7,176
Animals:						
Live.....	No. 310	No. 322	No. 363	No. 301	No. 328	No. 363
Dead.....	No. 1,847	No. 1,862	No. 1,805	No. 1,768	No. 1,974	No. 1,683
Birds and fowls.....	No. 5,812	No. 5,271	No. 7,474	No. 4,144	No. 5,244	No. 747
Telegrams.....	No. 797	No. 887	No. 873	No. 604	No. 916	No. 889
Total.....	18,052	19,523	17,692	14,632	16,388	9,335

The grand total of the traffic of the railroad for the months commencing with November, 1896, and ending with April, 1897: Tons carried, 35,412; packages, telegrams, animals, etc., 95,624.

Total income from freight and passenger traffic, \$4,444,311.44 paper, or \$650,000 gold.

It is to be noted that this railroad is only 155 miles long and is the oldest in South America. It is now owned by an English company.

JOHN N. RUFFIN,

Consul.

ASUNCION, August 1, 1898.

PERU.

The *Recueil Consulaire*, Vol. XCVI, Brussels, 1897, has a report on Peru, from which the following is taken:

Two submarine cables follow the coast of Peru—the Central and South American Telegraph Company, from Panama to Chile, with stations at Paita and Callao, and the West Coast of America Telegraph Company, which starts from Callao, touches at Mollendo and Arica, and continues its route to Chile. The telegraphic lines of the Peruvian Government have a total length of some 3,000 kilometers (about 2,000 miles). The city of Lima is served by the Peruvian Telephone Company, which connects it with the neighboring towns of Callao, Chorrillos, Barranco, and Miraflores. The subscription is from 5 to 7½ soles (\$2.25 to \$3.37) per month.

The railways of Peru are divided into two classes—those which belong to the Government and those which are the property of individual enterprise.

The first comprises:

First. The Central Railway, from Callao to Oroya, 220 kilometers (137 miles). The most elevated point is the tunnel from Paso to Galera, at the height of 4,775 meters (15,014 feet). From Lima there is a branch line for Ancon, 38 kilometers (24 miles).

Second. The line from Pacasmayo to Guadalupe and Jonau, 92 kilometers (57 miles).

Third. The line from Paita to Piura, 97 kilometers (60 miles).

Fourth. The narrow-gauge line from Salaverry to Trujillo and Ascope, 47 miles.

Fifth. The narrow-gauge line from Chimbote to Suchiman, 32 miles.

Sixth. The line from Pisco to Ica, 44 miles.

Seventh. The line from Mollendo to Arequipa, Juliaca, and Puno (318 miles). By this route a large transit commerce is carried on with Bolivia via Lake Titicaca. At Juliaca there is a branch road to Sicuani.

The railways belonging to private corporations are:

First. The line from Lima to Callao (8.6 miles), inaugurated in 1850, belonging to an English company.

Second. The line from Lima to Chorrillos, belonging to the same company.

Third. The line from Lima to Magdalena, a narrow-gauge road 3.7 miles long, belonging to a French company.

Fourth. The line from Lambayeque to Pimental, opened to traffic in 1867, narrow gauge, 15 miles long.

Fifth. The line from Eten to Ferrenafe and Patapo, 48 miles, narrow gauge.

Sixth. The line from Pura to Catacaos, 9.3 miles. Catacaos is the center of the manufacture of the so-called Panama straw hats.

These lines form altogether a network of 1,356 kilometers (843 miles) administered by the Peruvian Government, and 214 kilometers (133 miles) managed by private corporations. Peruvian commerce complains of the high tariff of the different lines.

The superb roads of the Incas have long since disappeared, and away from the railways and the vicinity of the large towns, everything is transported on the backs of mules, llamas, or Indians.

Minister Dudley sends from Lima, under date of May 11, 1899, copy and translation of a Government decree under which bids are invited for the construction of a line of railroad from Oroya, the present terminus of the Central Railroad of Peru (the trans-Andean line) to Cerro de Pasco, about 60 miles to the north. Cerro de Pasco, adds Mr. Dudley, owes its existence to the silver mines of the vicinity, long the most productive in the world and still very rich. Recent important discoveries of copper deposits in that region, coincident with the notable rise in the price of copper, have undoubtedly stimulated the project, by no means new, of securing cheaper and better transportation by all rail communication from Cerro de Pasco to the port of Callao.

The decree fixes the following maximum rates for transportation:

Freights.—For every 1,000 kilograms (2,204.6 pounds) per kilometer (0.62137 mile): First-class, 20 cents (8.6 cents in gold); second-class, 18 cents (7.7 cents); third-class, 15 cents (6.4 cents).

Fares.—Per kilometer: First-class, 5 cents (2.17 cents); second-class, 4 cents (1.7 cents).

Under date of July 14, 1899, Minister Dudley says that the contract was given to Mr. Ernesto Thorndike.

OCEAN TRANSPORTATION.

The *Revue du Commerce Extérieur*, Paris, September 16, 1899, says:

The navigation service to Peru is in the hands of 9 companies, of which 6 are English, 1 German, 1 Brazilian, and 1 Chilean.

The Pacific Steam Navigation Company (English) gives two coast services, both semimonthly. One line of steamers touches at ports between Valparaiso and Panama, and vice versa; another line carries on the coasting trade between Valparaiso and Pimentel. All these boats touch at Callao and the principal Peruvian ports. Connection with Europe (Liverpool and La Pallice) is via Magellan by vessels of the principal line, which touch twice a month at Valparaiso. A few months ago the company established, besides, a direct service of freight boats between Callao and Liverpool.

Lampport & Holt Company (English) has a monthly direct service between Liverpool, Havre, and Guayaquil, with stop at Callao; carries no passengers.

The Gulf Line (English) has a combined service monthly with Lampport & Holt, but does not touch at Havre.

The Merchants' Line (English) unites New York with Callao, with extension as far as Guayaquil; departures, on an average every month.

Booth Line and Red Cross Line (English) have lately established a combined service between the ports of Europe, Brazil, and Iquitos; departures, irregular.

The Deutsche Dampfschiffahrt-Gesellschaft Kosmos, by the recent acquisition of steamers of the Hamburg Pacific, has greatly increased its traffic. It has two departures per month by Havre-Hamburg and one by Central America, with stop at Guayaquil.

The Amazon Steam Navigation Company (English) gives regular service between Iquitos and the Amazonian ports of Brazil (monthly).

The Compania Sud Americana de Vapores (Chilean) gives to the Pacific coast a service identical with that of the Pacific Steam Navigation Company, with which it alternates its departure.

To this list may be added the Riva Company of Iquitos, and that running between Peru and Bolivia, by Lake Titicaca.

English lines from New York to Iquitos, from Iquitos to Callao, via Para, from San Francisco to Callao, and from Japan to the ports of Peru, are projected, and some are in course of execution.

URUGUAY.

TRANSPORTATION FACILITIES.

Consul Schramm writes from Montevideo, February 28, 1897:

The conditions of transportation have not changed since the report made to the Department of State and embodied in "Highways of Commerce," with the exception that the Prince and Norton lines of steamships have to be added to the list running from the United States to this country whenever there is any freight in sight. The freight rates from Montevideo to New York are about \$4.50, and from New York to Montevideo, about \$6 per ton. The freight rates from Montevideo to Liverpool are about \$2.90 to \$3.12, and from Liverpool to Montevideo about \$3.40 per ton, general cargo. This is the average as nearly as can be ascertained.

VENEZUELA.

OCEAN STEAMSHIP LINES.

Under date of October 1, 1899, Consul Goldschmidt, of La Guayra, says:

The following steamship lines touch regularly at this port, all carrying mail, passengers, and freight:

The Red D Line (American); two steamers per month, New York to La Guayra and Puerto Cabello, via Porto Rican ports and Curaçoa.

The Dutch Line; two steamers per month, Amsterdam to New York and return, touch at La Guayra and Puerto Cabello.

The Spanish Transatlantic Line; one steamer per month, New York to La Guayra, via Havana and Santiago, Cuba.

Compagnie Générale Transatlantique (French); one boat from St. Nazaire, one from Havre and Bordean, and one from Marseilles.

The Hamburg-American Line (German); two steamers per month from Hamburg, via St. Thomas.

La Veloce Line (Italian), from Genoa, via Spain and St. Thomas; one steamer per month.

Royal Mail Steamship Company (British); two passenger steamers and one cargo steamer per month from England, via Barbados and Trinidad.

The West Indian and Pacific Line (British), from Liverpool to Galveston or New Orleans, touches here twice a month from Barbados and Trinidad.

Harrison Line (British); one steamer per month from Liverpool to New Orleans or Galveston touches La Guayra and Puerto Cabello.

The Prince Line (British) formerly sent two steamers per month to this port—one leaving Genoa for United States ports, the other leaving Antwerp for the same destination. It has been about a year since a regular steamer of this line has touched here.

RAILWAYS.

There are at present 862½ kilometers (526 miles) of railway in operation in this country:

La Guayra to Caracas; length, 36½ kilometers (23 miles); gauge, 0.915 meter.

Gran Ferrocarril de Venezuela, from Caracas to Valencia; 179 kilometers (111 miles); gauge, 1.07 meters.

Puerto Cabello to Valencia; 54 kilometers (33½ miles).

Ferrocarril Central, from Caracas to Los Mangos; 36 kilometers (22 miles); gauge, 1.07 meters.

Gran Ferrocarril de La Ceiba, from Ceiba to Valera; 90 kilometers (56 miles); gauge, 0.915 meter.

Sur Oeste de Venezuela, from Arva to Barquisimeta; 88 kilometers (55 miles); gauge, 0.061 meter.

Ferrocarril Bolivar, from Tuccacas to the mines of Oroa; 80 kilometers (49.7 miles); gauge, 0.061 meter.

La Vela to Coro; 13½ kilometers (8 miles); gauge, 0.915 meter.

Ferrocarril de Sta. Barbara to La Vigia; 60 kilometers (37 miles); gauge, 1 meter.

Gran Ferrocarril del Fachira; 115 kilometers (71.4 miles); gauge, 1.07 meters.

Barcebona to Guanta; 36.5 kilometers (23 miles); gauge, 1.07 meters.

Carenera to Guasso; 33 kilometers (20.5 miles); gauge, 0.915 meter.

Ferrocarril del Sur, Caracas to Valle; 4 kilometers (2.4 miles); gauge, 0.063 meter.

Macula, La Guayra, and Marqueta; 8 kilometers (4.9 miles); gauge, 0.91½ meter.

Besides this there is a projected railway from Puerto Cabello to Yaritagua, a concession for building which has been given to Dr. Murcoz Tebar.

CABLE AND TELEGRAPH SERVICE.

Consul Proskauer, of Puerto Cabello, on October 14, 1897, writes:

The recent completion of the cable line from here to La Guayra, thence via Curaçao, Haiti, etc., to New York, has proven of infinite service to the merchants of Puerto Cabello. Formerly, messages passed over the national telegraph lines to Caracas and thence to La Guayra, often causing delay of many hours, not infrequently days, and sometimes giving imperfect service. The present reliability of the cable has been productive of more frequent use, and orders to New York for goods have increased.

The telegraph system of the country is owned and controlled by the National Government and connects the various smaller places which can not be reached by rail or other rapid communication with Caracas. This, in a large measure, avoids the evil consequences of the poor mail facilities. The rate charged for messages is much less than in the United States.

INTERNAL WATER ROUTES.

The Tocuyo Navigation Company, a United States enterprise recently organized for the purpose of exploring the river of that name, will, I think, meet with success. I am not prepared to give the detailed plans of the company. Its general objects are to colonize the rich lands along the river banks for the cultivation of cocoa, tobacco, and bananas, and, in the higher altitudes, corn, coffee, etc., and to bring the larger and smaller towns up the river into closer business communication with Puerto Cabello. During the last few weeks, the Lake of Valencia has been navigated by a small steamer in connection with the German railroad. The lake is 22 miles long and 10 miles wide. As the railroad skirts the lake only on one side, this new arrangement will bring all the towns situated on it into closer communication and enable them to send their freight to the stations by a less circuitous, cheaper, and more rapid route.

NEW STEAMSHIP SERVICE.

Mr. Russell, secretary of the legation at Caracas, writes under date of December 17, 1898, that the Hamburg-American Steamship Company has just established a new service to Venezuela. Two ships have been constructed for this service, and they will make monthly trips, beginning February 15, 1899. The itinerary is as follows: Hamburg, Havre, Barbados, Trinidad, Ciudad Bolivar, Carupano, Curnana, Guanta, and Maracaibo. The boats are specially constructed for the Maracaibo and Ciudad Bolivar trade. They have 1,237 tons displacement, 500 horsepower, speed of 9 knots, carrying capacity of 1,800 tons; draft, 9 feet with 600 tons of cargo and 11 feet with 950 tons; water-ballast tank, 374 tons capacity.

INLAND-NAVIGATION PROJECT IN SOUTH AMERICA.

Minister Loomis writes from Caracas, under date of June 16, 1899, in regard to a plan recently presented to the Venezuelan Government which, he says, looks to the construction of the greatest system of inland waterways in the world. It is proposed to connect by means of canals the river systems of the continent of South America, making a navigable waterway from the valley of the Orinoco to that of La Plata inclusive. The estimated cost of this work is \$200,000,000, which figure, however, is largely conjectural, as no accurate surveys or detailed statement of the probable cost has ever been made. It is not unlikely, continues Mr. Loomis, that this matter will be taken up seriously by some of the South American governments within a few years.

AFRICA.

CAPE TO CAIRO RAILWAY.¹

The length of the projected Cape to Cairo Railway has been variously estimated at between 5,000 and 6,000 miles. Nearly 1,400 miles from the south—from Cape Town to Buluwayo—and over 1,000 miles at the northern end—from Cairo to Khartoum—are nearing completion. From Buluwayo north, some 250 miles have been surveyed, which would bring the road within 150 miles of the Zambesi. From here, the line is projected to follow the Loangwa River to its source near the south of Lake Tanganyika, and thence it will probably run along the Kagera River to Lake Victoria Nyanza and Albert Nyanza, and down the Nile to Khartoum. The waters of the lake will, it is thought, be used for transportation purposes at first, as 400 miles of Tanganyika and 300 of Victoria Nyanza can be traversed by steamer. The 450 miles from Khartoum to Fashoda can also be traversed by boat on the Nile, but it is the ultimate intention to construct a railroad the entire distance.

¹ Summarized from various publications, including reports of U. S. consular officers.

The side roads which are expected to connect the principal line with the seacoast are, on the east, Durban-Johannesburg, Delagoa Bay-Johannesburg, Beira-Buluwayo, Zanzibar-Ujiji, on Lake Tanganyika, Mombasa-Uganda, and Kassala-Suakin. On the west, Walfisch Bay-Buluwayo, St. Paul de Loanda-Tanganyika, Matadi-Uganda, and Lake Tchad-Fashoda. Of these lines, that from Beira is the only one that now connects with the main line, but the two lines that terminate in the Transvaal need comparatively little work to bring them in connection therewith; the German line (Zanzibar-Ujiji) has been surveyed; half (300 miles) of the British East African line from Mombasa is complete, and only 75 miles remain to be surveyed; and the Kassala-Suakin route is under discussion. In West Africa, the Portuguese line from St. Paul de Loanda runs for over 225 miles into the interior; the Belgian route from Matadi covers some 280 miles, and a further distance has been surveyed; telegraphs and telephones have also been constructed. The other two lines (from Walfisch Bay across German territory to Buluwayo, and from Tchad, in the Niger territory, to Fashoda) are under consideration.

ABYSSINIA.

PROPOSED RAILROAD.

For some time, there has been talk of a railroad being built from Djibouti, which is the principal seaport town of the French Somali protectorate in East Africa, to the city of Harar, Abyssinia, and at last there is a reasonable assurance that it will be built. A company of capitalists, whose head office is at 5 Rue Scribe, Paris, are at the head of the enterprise, and their secretary and general manager is C. Havard, of Djibouti.

As is well known, Abyssinia is one of the richest and most fertile countries on the continent of Africa, and Harar is its chief commercial city. The principal articles exported from that country are coffee, gums, hides, skins, civet, ivory, beeswax, and gold; while the two principal articles of import are cotton goods and petroleum. All the imports and exports going to and from this country to the seaport towns of Zaila, British Somaliland, and Djibouti, French Somaliland, are transported by camels in caravans. Considering the fact that Harar is about 280 miles inland, and these caravans only make on an average of 10 miles a day, the carrying of goods is quite a costly as well as a slow process. It has only within the last few years that there has been much trade between the outside world and Abyssinia, and even now it is not possible to give correct figures of the total trade. Enough, however, is known to fully justify the building of this road.

The line has been surveyed between the two points, which are about 300 kilometers (186.4128 miles) apart, and work has actually commenced

at Djibouti and several other points on the line. It is intended to build only a narrow-gauge road at the start, the proposed gauge between the rails being 1 meter (39.37 inches), and then if the road proves a success a broad gauge can easily be substituted. All the laborers employed in building the road are Somalis and Arabs, as, on account of the heat of the low-lying coast country, the importation of white labor would be a useless expense.

W. W. MASTERSON,
Consul.

ADEN, *December 20, 1897.*

ANGOLA.

La Quinzaine Coloniale, Paris, March 25, 1897, quotes the following from the *Revue Scientifique*:

The railway line in the Portuguese colony of Angola is one of the longest in West Africa. Since 1894, 260 kilometers (161.55 miles) have been opened, and to-day it comprises 363 kilometers (225.55 miles). It starts from Loanda, which, although it has lost much of its former importance, has still no less than 50,000 inhabitants, some 1,200 or 1,500 of whom are Europeans. The end of the line is at Ambaca-Lucalla. The rails are of steel and weigh 20 kilograms (about 44 pounds) a meter. The sleepers are not of metal, but of fir, chemically treated, which prevents the ravages of ants. The average cost of constructing the line, including the interest on the money invested, was 111,110 francs per kilometer (\$21,444 per 0.62137 mile). If the taxes and the difference between the nominal and the issue price of the bonds are taken into consideration, the cost per kilometer amounts to 144,000 francs (\$27,792), which is not excessive when the numerous difficulties in the way of construction are remembered.

The question of labor was easily solved. As soon as it was decided to build the railroad the natives came in crowds to offer their services. In 1890 there were 3,000 men employed on the works. The system followed was that which had been successfully practiced in the construction of the railway in the Belgian colony in the Kongo. A number of negroes would undertake a certain section for a price agreed upon beforehand, varying according to the apparent difficulty of digging, etc. When the job was completed, the contractor would pay the specified amount, distributing to each one according to the proportion of work which, in the opinion of the majority, he had performed. A corps of European engineers, mostly French, had charge of the works. The technical instruction of the negroes progressed rapidly during the construction. It may be said that they manage the line at present. The personnel of the telegraph service is composed of natives; in the workshops, carpenters, masons, plasterers, painters, smiths, etc., are negroes who have learned these trades from foreign instructors; they are employed as firemen, etc., on the road.

The locomotives weigh, on an average, 25 tons. The trains make a speed of 20 kilometers (12.42 miles) an hour as far as Oeiras; from there to Delatando, 15 kilometers an hour; and for the rest of the route, 20 kilometers. It formerly took ten or twelve days to go from Loanda to Ambaca. It now takes about twenty-three hours. The line promises to be successful from a financial standpoint, and it is thought that there will be no necessity to have recourse to the guaranties offered by the Government.

AZORES.

NEW MAIL SERVICE.

Under date of June 8, 1898, Consul Pickerell, of St. Michaels, reports the arrival of the steamship *Trojan Prince*, with mail from America to the Azores Islands. A number of the business people of the city have expressed their appreciation of the service. The consul continues:

I trust it will not be long before arrangements can be made with the other two Portuguese lines that call here, as I am sure it will materially assist in enlarging our export business.

BRITISH EAST AFRICA.

The Scientific American, New York, October 21, 1899, gives details in regard to the Uganda Railway. The line starts from Kilindini, on the island of Mombasa, and crosses an arm of the sea on a steel bridge. By the end of the year 1898, 227 miles had been opened for goods traffic, and some 207 miles for passengers. In March, 1899, only 75 miles remained to be surveyed. At that date rails had been laid as far as 279 miles, and the permanent alignment had been carried to 418 miles. The average cost per mile has been estimated at £3,422. The article continues:

The two escarpments which the line has to cross have greatly added to its cost and to the difficulties of the engineers. The line climbs from the level of the Indian Ocean to a height of about 7,700 feet at the Kikuyu escarpment; it then drops irregularly to 6,000 feet, only to climb again to 8,330 feet over the Mau escarpment. Between the two summits lies the great meridional rift, which has an average width of 25 to 30 miles, and extends north and south considerably beyond the limits of British territory. The floor of the rift is by no means level, but rises from the south at a gradual slope to the saddle at Longonot, near Lake Naivasha. After several undulations at Lake Naivasha, Elmenteita, and Nakuro, it slopes downward again to the north past Lake Baringo. The two great volcanoes, Longonot and Suswa, with numerous smaller cones and irregularities, rise from the floor of the rift, and all the lakes are manifestly of volcanic origin. On one side of the rift is the Mau escarpment, and on the other side the Kikuyu escarpment, rising to an elevation of from 8,000 feet to 10,000 feet, the crest being 2,000 feet to 3,000 feet above the floor of the rift. From the summit of Mau the line drops to Lake Victoria, which is merely 4,000 feet above sea level.

The great difficulty encountered has been the lack of water. The laborers had to be imported from India, for the most part, and there were epidemics of fever. Delay has also been caused by want of an adequate number of locomotives. Engines were ordered from America, also a few from India.

CAPE VERDE ISLANDS.

Acting Consul Bortleman sends from Santiago, September 13, 1898, the following information:

STEAMSHIP LINES (REGULAR) TOUCHING AT PORTO GRANDE, ST. VINCENT.

Empreza Nacional de Navegação Portuguesa, from Lisbon to west coast of Africa; Mala Real Portuguesa, from Lisbon to Brazil; Pacific Steam Navigation Company, from Liverpool to Valparaiso, also to west coast ports; Royal Mail Steamship Company, from Southampton to Brazil; Kosmos Line, from Germany to Brazil, Plate, and west coast of South and Central America; Hamburg South American Steamship Company, from Germany to Brazil; Navigazione Generale Italiana, from Genoa to Brazil; Lamport & Holt, from Germany to Brazil, and many others not regular.

Passenger rates from Lisbon per steamers *Ambaca, Angola, Cabo Verde, Cazengo, St. Thomé or Loanda.*

[Empreza Nacional de Navegação A Vapor por Africa Portuguesa.]

To—	First class.	Second class.	Third class.
Madeira	\$29.50	\$19.66	\$9.83
St. Vincent	78.66	59.00	32.77
Santiago	78.66	59.00	32.77
Bissau and Bolama	96.32	76.47	39.53
Principe	131.10	98.32	43.73
St. Thomé	131.10	98.32	43.70
Cabinda, San Antonio, Ambrizette, Ambriz, and Loanda	168.87	120.17	47.16
Novo Redondo and Benguela	174.80	131.10	54.62
Mossamedes	185.72	142.02	60.08

Freight rates from Lisbon to Cape Verde Islands.

Articles.	Rates.
Flour, per barrel of 90 kilos	\$1.03½
Liquida, per pipe of 450 liters	5.75
Oil, in tins of 16½ liters .....	.46
Rice or vegetables, per sack .....	.75
Lime, cement, furniture, wood, etc., per cubic meter	5.75
All other cargo not specified, per cubic meter	9.20
Cargo by weight, per 1,000 kilos	9.20
Special terms for heavy cargo and cattle.	

1 kilo equals 2.2046 pounds; 1 liter, 0.908 quart.

Cable rates from the Cape Verde Islands, via Brazilian Submarine Telegraph Company and Direct African Cable Company.

Country.	Rates.	Via.	Country.	Rates.	Via.
Europe:			Africa:		
Azores	\$0.078	Madeira.	Bathurst	\$0.048	Bathurst.
Belgium .....	.088	Do.	Benguela .....	.235	Do.
Denmark .....	.084	Do.	Bissau .....	.080	Do.
France .....	.090	Do.	Cameroons .....	.169	Do.
Germany .....	.083	Do.	Canary .....	.075	Do.
Great Britain .....	.082	Do.	Gaboon .....	.088	Do.
Holland .....	.083	Do.	Loanda .....	.140	Do.
Italy .....	.087	Do.	Madeira .....	.203	St. Vincent.
Norway .....	.087	Do.	Mossamedes .....	.055	Bathurst.
Russia .....	.090	Do.	Principe .....	.184	Do.
Spain .....	.080	Do.	St. Thomé .....	.177	Do.
Portugal .....	.068	Do.	St. Vincent .....	.022	Direct.
Sweden .....	.087	Do.	Senegal .....	.058	Bathurst.

Cable rates from the Cape Verde Islands, via Brazilian Submarine Telegraph Company and Direct African Cable Company—Continued.

Country.	Rates.	Via.	Country.	Rates.	Via.	
Africa—Continued.			America—Continued.			
Sierra Leone	\$0.088	Bathurst.	Georgia	} \$0.108	St. Vincent.	
Lourenço Marquez .....	.190	Do.	New Orleans			
Mozambique .....	.190	Do.	Michigan			
Seychelles	} .189	Do.	Ohio			
Zanzibar				Maryland	} .106	Do.
America:			Pennsylvania	} .113			Do.
New York City	} .102	St. Vincent.	Texas		} .115	Do.
Brooklyn				California		
Nova Scotia				Brazil:		
Maine				Bahia .....	.129	Do.
Massachusetts				Pernambuco .....	.091	Do.
New Brunswick				Manaos .....	.158	Do.
Ontario				Rio Janeiro .....	.129	Do.
Quebec				Argentina:		
Newfoundland				Buenos Ayres .....	.129	Do.
Carolinas						

EGYPT.

Internal transportation is by rail and the steamboat services of the Nile. As the caravan routes have no bearing upon American trade, they are not considered here.

The railroad mileage is somewhat in excess of 1,100, the fertile Delta being fairly gridironed with rails. The express routes are double tracked, and speed is considerably greater than that of most continental trains. From Cairo south to Baliana some 350 miles of single track have been completed, and the extension of this line on to Assouan (first cataract), 225 miles farther south, was in progress when the Dongola expedition necessitated the assembling of all materials and labor to construct the military railroad in the Soudan. An extension of this line is to be made at once, however, between Nag-Hamadi and Keneh, and American manufacturers have recently been invited to bid for the supply of girders required in the construction.

The Nile passenger, post, and freight boats run as far as Wady Halfa (the second cataract). They are operated by the firm of Thomas Cook & Son, who contract with the Egyptian Government for mails, military, and Government transportation, and smaller companies do an exclusive tourist traffic.

Vessels touching at Alexandria and Port Said afford facilities for coastwise transportation, and Damietta (one of the mouths of the Nile) and Port Said are connected by dahabayah mail service across the intervening Lake Menzaleh.

The most rapid means of communication with a United States port is from Alexandria to Brindisi (Italy) and thence overland to connection with the Atlantic lines. The journey to New York can be made in twelve days by this route.

FREIGHT RATES.

In considering freight rates from Egypt to the United States, it must be borne in mind that no regular communication with home ports exists. Any direct carriage that may present itself is by an occasional ocean "tramp" or sailing vessel. Transportation to the United States is generally effected via Liverpool or Hull. Sailing vessels bound from Alexandria to New York are used for the carriage of rags in bales. Freight rates for these goods range from \$5 to \$7.50 per ton.

The following staple exports are shipped at the following rates: Cotton, to Liverpool \$2.25 per ton of 40 cubic feet, and thence to Boston \$2 per ton weight; to New York \$2 per ton of 40 cubic feet; to Philadelphia \$2.75 per ton of 40 cubic feet. Gum arabic, by Liverpool to United States, per ton, \$7 to \$10; senna, \$22 to \$25.

HORACE LEE WASHINGTON,
Vice-Consul-General.

CAIRO, *September 4, 1896.*

SUEZ CANAL TRAFFIC.

The following is a statement of the Suez Canal traffic for the half year ended June 30, 1898:

Nationality.	Number of ships.	Net tonnage	Traffic receipts.
British	1, 186	3, 252, 634. 76	\$5, 904, 826
French	107	439, 001. 71	535, 320
Austrian	49	122, 658. 02	221, 783
Spanish	18	54, 914. 41	111, 534
Italian	39	69, 846. 68	132, 942
Norwegian	28	54, 586. 87	101, 895
Portuguese	3	297. 45	837
American	4	1, 531. 17	2, 750
Japanese	17	63, 206. 67	122, 231
Russian	27	82, 648. 63	180, 419
Dutch	99	194, 570. 16	369, 664
German	178	471, 571. 05	873, 585
Argentine	1	319. 05	582
Egyptian	5	4, 238. 73	10, 809
Danish	3	7, 562. 78	11, 856
Ottoman	15	19, 119. 86	58, 354
Greek	2	1, 908. 74	4, 118
Chinese	1	1, 463. 43	2, 645
Total	1, 792	4, 842, 078. 17	8, 636, 820

ETHELBERT WATTS,
Vice and Deputy Consul-General.

CAIRO, *July 27, 1898.*

Number and tonnage of vessels that passed through the Suez Canal during the calendar year 1897, arranged under their respective flags.

[From British Returns of Shipping and Tonnage.]

Flag.	Merchant vessels.		Mail steamers.		War ships and transports.	
	Number.	Net tonnage.	Number.	Net tonnage.	Number.	Net tonnage.
Great Britain.....	1,588	4,295,360.25	229	818,455.72	42	50,465.15
Germany.....	231	538,552.56	90	307,113.73	1	1,517.11
France.....	67	153,631.06	124	348,259.86	6	5,438.785
Italy.....	3	4,971.36	53	109,826.67	8	5,449.95
Holland.....	89	141,207.89	106	231,977.24	8	6,039.837
Austria-Hungary.....	25	44,402.62	48	134,645.85	4	4,289.109
Spain.....	9	18,382.54	37	116,179.91	1	324.32
Russia.....	4	9,933.33	40	184,505.65		
Norway.....	47	84,629.41				
Turkey.....	7	5,557.27				
Japan.....	34	106,346.38			2	8,088.42
Portugal.....					1	195.18
Egypt.....	1	1,137.09				
America.....	1	1,961.98			2	1,752.84
China.....	3	4,067.21				
Sweden.....	1	1,225.75				
Denmark.....	2	1,045.97				
Siam.....					2	2,559.98
Mexico.....					1	531.28
Total.....	2,112	5,412,407.62	727	2,200,964.63	78	86,651.911

Flag.	Government chartered vessels.		Vessels in ballast.		Total.	
	Number.	Net tonnage.	Number.	Net tonnage.	Number.	Net tonnage.
Great Britain.....	25	100,221.27	21	54,633.97	1,905	5,319,136.86
Germany.....	3	11,501.72			325	858,685.12
France.....	3	8,108.41	2	4,167.46	202	519,605.525
Italy.....	4	7,068.11	3	2,148.26	71	129,464.35
Holland.....			3	3,023.56	206	382,248.527
Austria-Hungary.....			1	699.28	78	184,036.859
Spain.....	1	2,944.09			48	137,830.86
Russia.....					44	144,438.94
Norway.....			1	2,559.37	48	87,185.78
Turkey.....					7	5,557.27
Japan.....					36	114,434.80
Portugal.....					1	195.18
Egypt.....			2	2,274.18	3	3,411.27
America.....					3	3,714.77
China.....					3	4,067.21
Sweden.....					1	1,225.75
Denmark.....					2	1,043.97
Siam.....					2	2,559.98
Mexico.....					1	531.28
Total.....	36	129,843.60	33	69,506.08	2,986	7,899,373.841

According to the report of the Suez Canal Company in June, 1899, the canal has been widened from 72 to 121 feet.

OPENING OF THE SOUDAN.

The Board of Trade Journal, London, April, 1899, gives the following summary of a report by Lord Cromer to the Foreign Office on the opening up of the Soudan to civilization and trade:

Almost immediately after the battle of Omdurman, a sum of £300,000 (\$1,459,950) was granted, in order to enable the railway to be continued from the Atbara to opposite Khartoum. The distance is 187 miles. On February 13 about 20 miles of bank had been made and some 15 miles of rails laid. Progress has been delayed by the necessity of making a somewhat extensive cutting and erecting a long stretch of stone bank at a spot about 40 miles south of the Atbara.

The substructure of the permanent bridge and the manufacture and placing in position of the cylinders is in the hands of an Italian contractor. It is anticipated that this work will be completed before the superstructure can reach the Athara.

In giving the order for this bridge the time of delivery was even a more important consideration than price. An English firm offered to deliver the work in six and one-half months, at a cost of £10,490 (\$51,050). The price tendered by an American firm was £6,500 (\$31,632) for delivery in forty-two days. The American offer was therefore accepted. These facts may admit of some explanation, but would appear, however, to merit the attention of bridge builders in Great Britain. The officer who managed this business writes: "In my opinion, the American firms gain time in keeping to fixed standards, either in locomotives or in bridges; consequently, having all their patterns, drawings, etc., always at hand, they are able to begin work at once. In England everyone seems to have special designs, which take time in working out, and in most cases they have to send out for rolling, etc., whereas these large American firms are independent of everyone, and the rolling mills, as well as other machinery, are in their own hands."

It can not be doubted that railways constitute, perhaps, the greatest want of the Soudan. Nevertheless, in this as in other matters, it is desirable to proceed with deliberation.

The first question to decide is what direction the railway should take, and which, among various projects which may be supported by more or less valid arguments, calls most urgently for prompt exertion.

There is water communication, which is free at all seasons of the year, between Khartoum and Fashoda. A railway connecting these two points would necessarily compete with river transport. The construction of this line is not, therefore, a matter of urgency.

It is not only probable, but almost certain, that sooner or later railway communication will be established between the Nile Valley and the coast of the Red Sea. At first sight the most obvious course to pursue would seem to be to connect Suakin and Berber. The construction of this line has, in fact, often been suggested. So long as the dervishes remained in possession of Berber it was clear that any discussion on this subject was premature. This obstacle is now removed. The question may therefore be considered on its own merits.

The line from Suakin to Berber has never yet been properly surveyed; neither has any trustworthy estimate been made of its cost. It is certain that throughout its course it will pass through nothing but a long tract of almost waterless desert. The most competent authorities on this question are of opinion that connection with the Red Sea via Abu Haraz, Gedarif, and Kassala to some spot on the coast, although relatively circuitous, is to be preferred to the direct route from Suakin to Berber. The establishment of connection with the Red Sea, although obviously desirable, is not of such immediate importance as the execution of an alternative project.

It would appear to be desirable, as soon as the railway reaches Khartoum, to make arrangements for its extension to Abu Haraz, with a view ultimately to reaching Gedarif. The distance is 122 miles, or following the windings of the river, about 143 miles. The line has not yet been surveyed, but it is believed that no great engineering difficulties will have to be encountered.

It is hoped that the railway to Khartoum will be finished by the end of 1899, and that it will be possible to arrange for the extension to Abu Haraz in 1900.

The Soudan telegraph system south of Khartoum will be extended up the east bank of the Blue Nile to Abu Haraz. Thence a branch line will be carried to Gedarif, which will be connected with Kassala.

A second line will run from Abu Haraz to Sennaar, the Blue Nile being crossed by means of a cable. From Sennaar the line will run to Abba Island, on the White Nile, and thence up the river to Fashoda and the Sobat.

These extensions will require about 1,000 miles of wire. The greater portion of the wire has been already sent to the Soudan. Work is proceeding on the Kassala-Gedarif section.

An arrangement has been made as to the rates to be charged on through telegrams passing over the Soudanese and Egyptian lines in the event of telegraphic communication being established with South Africa.

FRENCH GUINEA.

The *Revue du Commerce Extérieur*, Paris, February 18, 1899, gives an account of the projected railway in French Guinea. A second survey has recently been made with a view to establishing a line of communication between the Upper Niger and Konakry. In 1895-96 the preliminary studies for a wagon road were made, with the intention of making Faramah, on the Niger, the terminus of the road. It was ascertained, however, that the Niger is never navigable at this point, and as a result the road, in place of following the French-English frontier, must take a more easterly route. The additional length is compensated by the advantage of opening up the mountainous region of Timbo, one of the richest territories of western Africa. This road has been completed for about 65 miles, as far as Mambia. In October, 1897, the preliminary survey for the railway in Guinea was begun, with the result that a road 342 miles long, without viaduct or tunnel, has been outlined. The most important engineering work will be a bridge 196 feet long over the Kolente or Grande Scarcie. The greatest incline is 9.8 inches per yard, and the curves have generally a radius of 109 yards.

The following is from the same journal in its edition of April 15, 1899:

The union of the telegraphic network of French Guinea with that of Senegal has just been effected by the completion of the line to Kankelefa, in Portuguese Guinea. Dispatches can now be sent from Saint Louis to Konakry and intermediate stations, independent of the submarine cable which follows the coast.

Another line, destined to connect the Soudan with the Ivory coast, is now under construction, the work being prosecuted with the greatest activity. With the completion of this line, the different French colonies of West Africa will have direct telegraphic communication over wires run exclusively in French territory.

LOURENÇO MARQUEZ.

Since the date of my special report upon the "highways of commerce," there have been a number of changes in the steamship lines running to this coast, one British line, the Union Steamship Company, having discontinued its service north of Lourenço Marquez and several new lines having made their appearance.

The steamship company doing the most business on this coast at present is undoubtedly the German East African Line, whose steamers

make trips every three weeks from Hamburg to this coast, calling at Rotterdam, Lisbon, Marseilles, Naples, Zanzibar, the German East African ports, all the ports in this province, and Durban, Natal, which is the southern terminus of the line. The voyage from Hamburg to Natal can, according to the company's time table, be done in just two months, but as steamers on this coast meet with innumerable delays, it is best to add a week or more to these figures. The vessels of this line are excellently fitted up for carrying first-class passengers, but not much can be said in favor of the accommodations for other classes.

First-class fares from Hamburg to this coast are as follows: To Mozambique, \$190.40; to Beira, Lourenço Marquez, or Durban, \$214.20; Mozambique to Beira, \$35.70; to Lourenço Marquez, \$52.36; to Durban, \$68.02.

The following vessels comprise the fleet of this line:

	Tons.		Tons.
Konig.....	5,500	Reichstag.....	2,600
Herzog.....	5,500	Bundesrath.....	2,600
Kanzler.....	3,600	Wisemann.....	600
Kaiser.....	3,300	Peters.....	600
Admiral.....	3,000	Setos.....	2,200
General.....	3,000	Safari.....	1,600

This line receives a subsidy from both the German and Portuguese Governments for carrying the German and Portuguese mails to and from German East Africa and Portuguese East Africa.

The freight rates on this line are as follows from Hamburg and other European ports to Mozambique: First-class, per ton, \$9.52; second class, per ton, \$13.09; third class, per ton, \$15.47; treasury, 1 per cent; landing charges per ton, \$1.60; on through bill of lading from New York, \$3.57 extra.

From Hamburg and other European ports to Kiliman, Chinde, Beira, and Inhambane, the rates are from \$7.73 to \$16.66 per ton, with landing charges as follows: At Kiliman and Chinde, \$1.78 per ton; at Beira and Inhambane, \$2.38 per ton. From Hamburg and other European ports to Lourenço Marquez the rates on ordinary classes are from \$7.73 to \$13.09 per ton, exclusive of landing charges.

The following are the rates upon the special classes, including landing charges.

Articles.	Marks.	United States equivalent.
Bricks, cement, tiles, etc.....	27½	\$6.55
Gin and alcohol.....	37½	8.92
Coke.....	65	15.47
Boilers.....	95	22.61
Cartridges.....	86½	20.53
Acids, chloroform, etc.....	115	27.37

Treasure, 1¼ per cent and 10 per cent primage.

The freight rates from all Mozambique ports to all European ports for produce are from \$14.28 to \$19.04 per ton, with \$3.57 extra to New York.

The large intermediate steamers of the Union Line from Southampton, and of the Castle Line from London, via the Cape ports and Durban, call every two weeks at Lourenço Marquez, but come no farther north. The vessels of the Union Line are excellent. The first-class passenger tariff of the Castle and Union lines is, London to Lourenço Marquez, \$209.99; Beira, \$243.32; Chinde, Kiliman, and Mozambique, \$255.49.

Passengers by these lines bound for points north of Lourenço Marquez transship at that port into the vessels of the German East African Line. The freight rates of the Union and Castle lines are practically the same as those of the German Line.

The British Steam Navigation Company maintains a monthly service between Bombay and Lourenço Marquez via Zanzibar and the Mozambique coast ports.

The steamers of the British Colonial Steamship Company, of the Clan Line, and of Messrs. Bullard, King & Co., from England via the Cape, call monthly at Lourenço Marquez, Beira, and Chinde, and then continue to India or Australia.

Several boats owned by Indian merchants ply regularly between Bombay and Lourenço Marquez, via Mauritius.

The steamers of two lines from New York—Messrs. John Norton & Sons, Wall street, agents—via the Cape ports, call here about once a month, continuing to the east.

The steamers of the Chargeurs Reunis make monthly voyages from Havre to this coast, calling at the following ports in the order named: Bordeaux, Lisbon, St. Paul de Loanda, Cape Town, Lourenço Marquez, ports of Madagascar and Mozambique, and back again by the same route.

Freight can be shipped from New Orleans and New York by this line on through bills of lading at low rates. The New York agent is the Compagnie Générale Transatlantique; New Orleans agent, S. V. Fornasis & Co.

The Messageries Maritimes has a number of steamers running between France and Madagascar, and intends soon to establish a branch service to Lourenço Marquez.

It will be seen that, although this is a Portuguese province, Portugal has no share in the carrying trade. The only vessels on this coast flying the Portuguese flag are a few gunboats and coasting steamers.

W. STANLEY HOLLIS,

Consul.

LOURENÇO MARQUEZ, *September 30, 1896.*

Under date of October 28, 1898, Mr. Hollis adds:

In the last two years, there have been practically no changes in the steamship lines running to this port.

The German line from Hamburg is still running with the same vessels and with practically the same freight and passenger tariffs.

The Chargeurs Réunis and the Messageries Maritimes lines continue their monthly steamers from France.

The two leading English lines, the Union Steamship Company and the Castle Line, are still carrying the mails and doing the greater part of the passenger business between England and South Africa. Several new vessels have been added to the fleets of these lines. The Union Steamship Company, in particular, has pursued a very progressive policy, and has added a number of fine vessels to its fleet.

The following table shows the fleet of this company as it was in 1896, and as it now is in 1898:

Name.	Tonnage.	Name.	Tonnage.
1896.		1898.	
Scot—T. S	7,794	Saxon—T. S	10,300
Norman—T. S	7,537	Briton—T. S	10,248
Gascon—T. S	6,200	Scot—T. S	7,815
Gaika—T. S	6,200	Norman—T. S	7,537
Goorka—T. S	6,200	German—T. S	6,830
Guelph—T. S	4,916	Gascon—T. S	6,288
Green—T. S	4,747	Gaika—T. S	6,288
Gaul—T. S	4,744	Goorka—T. S	6,288
Goth—T. S	4,738	Guelph—T. S	4,916
Mexican	4,661	Green—T. S	4,747
Moor	4,464	Gaul—T. S	4,744
Tartar	4,425	Goth—T. S	4,738
Atheulan	3,882	Mexican	4,661
Trojan	3,652	Moor	4,464
Spartan	3,487	Trojan	3,652
Pretoria	3,303	Spartan	3,487
Arab	3,192	Arab	3,192

The mail steamers of this line, after passing round the Cape of Good Hope, come no farther north on this coast than Durban, Natal; but the slower intermediate steamers, or "G boats," as they are called from the fact that their names all begin with the letter "G," call regularly every two weeks at this port, and once a month one of these steamers goes on to Beira.

The passenger accommodations of the vessels of this line are first-class in every respect, and surpass those on many other well-known lines.

The "G boats" in particular are singularly steady, and it is a common occurrence for these vessels to make the thirty-seven days' voyage from Southampton to this port without even once having the "fiddles" on the saloon tables.

American business men, however, are probably more interested in the steamship lines running from New York to this port.

The Union Steamship Company and the Clan Line, represented in New York by Messrs. Barber & Co., and the Castle Line and the Bucknall Line, whose agents in New York are Messrs. Norton & Son, have for several years maintained a fairly regular freight service from New York to this port.

A new and competing line, composed of sundry English tramp steamers chartered by Messrs. Henry W. Peabody & Co., of New York, has recently made its appearance, and at present there is a rate war going on between this new line and the combined old lines or "ring," as they are termed. As a result, freight rates to-day are lower from the United States than from England.

Owing to the system of rebates, discounts, and special quotations practiced by these lines, it is quite useless for me to quote freight rates from this end of the line.

Intending shippers must go, in New York, from the agents of one line to those of the others and personally arrange their own rates. By so doing, I am of the opinion that they will not have to pay much more than \$6.50 per ton for freight upon ordinary goods shipped from New York to this port.

There are no docks here, alongside of which large steamers can lie and discharge cargoes. Consequently, all goods must be lightered. The discharging of steamers is, at present, going on in a very satisfactory manner. There is a sufficient number of steam cranes on the landing jetties to keep cargoes in motion, and the railway management enables goods, as fast as they are landed, to be loaded into freight cars.

The discharging and landing of cargoes from steamers of regular lines is carried on by agents employed by the steamship companies or by their agents, but cargoes from sailing vessels and steamers that are not regular in their calls at this port are landed by the agents to whom the vessels are consigned, except in cases when the agents are not provided with the necessary equipment.

The cost of landing in these instances varies from 6 to 7 shillings (\$1.46 to \$1.70) per ton, according to the amount of freight being landed at the port and the available means of discharging cargoes.

Forwarding charges, which include all charges for receiving, sorting, stacking, clearing through customs for transit, and placing on railway trucks or freight cars for the various consignees in the Transvaal, vary from 4s. 6d. (\$1.09) to 7s. (\$1.70) per ton. The firm of Messrs. De Waal & Co. is the oldest and the largest here that devotes itself principally to landing, clearing, forwarding, and agency work. Messrs. De Waal & Co. have given me considerable information relating to the forwarding of merchandise from this port, and have advised me that in calculating the 3 per cent "transit duty," the Lourenço Marquez custom-house adds the freight to the amount of the invoice and, where no freight is declared, increases the amount of the invoice by 25 per cent.

RAILWAY RATES.

Johannesburg, the leading city of the Transvaal, is 396 miles by rail from this port. The freight rates from Delagoa Bay to Johannesburg are as follows per 100 pounds weight:

Rough goods.....	\$1.00
Intermediate class.....	1.21
Normal goods, railroad risk.....	1.70

Classification.—Rough goods: Ashes, asphalt, bark, bones, bricks (rough), brimstone, sulphur, charcoal, chalk, cinders, clay, coal, coke, fire clay, fire bricks, firewood, flowerpots (earthen), gravel, hides, horn; rough, cast, or pig iron; lime, limestone, manure, nitrate of potash, nitrate of soda, ores of not greater value than \$220 per ton, packing matter, including grain bags, coal bags, wool sacks; earthen pipes, plaster of paris, rags, refuse, sand, skins (dried or salted), stone (rough), slates, sleepers, straw, tiles, tufa, lumber, tar, coal.

Intermediate class: Agricultural instruments, asbestos, candles, carbon in bags for electrical purposes, cement, coffee, collodion, cyanide of potassium, dynamite, fencing material, fresh fish, gelatine, girders (undamageable), gubr, grindstones, lead, machinery (undamageable), oatmeal, cast iron and cast-iron pipes (undamageable); planed, tongued, and grooved lumber; wool, wagon jacks, zinc ingots, rice, soap, sugar, sheep dip, tubes, and pipes, empty bottles (new), carbons, safety fuse, flour, galvanized iron.

Normal goods: All goods not otherwise specified.

Passenger trains leave Lourenço Marquez, Delagoa Bay, for the Transvaal every morning and evening, and make the through journey to Johannesburg, 396 miles, in twenty-seven hours.

The passenger fares to Johannesburg are as follows:

First-class.....	\$24.60
Second-class.....	19.74
Third-class.....	15.57

Distances and time by rail from Johannesburg to other South African ports.

To—	Distance.		Time by rail.
	Miles.	Hours.	
Durban.....	483	27	
East London.....	686	40	
Port Elizabeth.....	715	40	
Cape Town.....	1,015	61	

Forwarding agents; De Waal & Co., Pearson & Goddard, Wilcken & Ackerman, Hawke & Weedon, Alex Nebel.

Shipping agents and brokers: McIntosh, Findlay & Co., Allen, Wack & Co., De Oost Afrikaansche Company, Donaldson & Sievwright, Martin Budd.

Messrs. Wilcken & Ackerman are the agents of the Henry W. Peabody Steamship Line from New York.

Statement showing the amount of freight carried by the Delagoa Bay Railway during the year ending December 31, 1897.

Articles.	Quantity.	Articles.	Quantity.
Alcoholic drinks.....tons..	2,718	Oils.....tons..	376
Beans.....do.....	114	Oilseeds.....do.....	32
Beer.....do.....	499	Olive oil.....do.....	21
Candles.....do.....	130	Oxen.....number	379
Clay.....do.....	218	Papers, books, etc.....tons	89
Coal.....do.....	9,156	Railway material and supplies..do.	64,003
Cocoanuts and fruits.....do.	26	Rice.....do.....	218
Coffee.....do.....	72	Rope.....do.....	30
Cotton.....do.....	16	Rough metal.....do.....	1,374
Cotton cloth.....do.....	23	Salt.....do.....	275
Drugs and chemicals.....do.	2,514	Sugar.....do.....	2,860
Dry goods.....do.....	4,658	Tea.....do.....	30
Firewood.....do.....	2,727	Telegraph material.....do.	538
Fish.....do.....	29	Timber.....do.....	32,482
Flour.....do.....	7,174	Tobacco.....do.....	57
Government service.....do.	10,629	Canned goods.....do.....	620
Grain.....do.....	6,218	Vehicles.....number	7
Gums.....do.....	1	War material.....tons	1,153
Hay and forage.....do.....	9	Water.....do.....	190
Hides and skins.....do.....	1,602	Wine.....do.....	656
Horses.....number	1,162	Wool.....do.....	665
Kerosene oil.....tons..	1,359	Woolen cloth.....do.....	23
Live stock.....number	2,696	Worked metals.....do.....	5,102
Machinery.....tons..	2,425	Sundry articles.....do.....	25,240
Minerals.....do.....	1,178	Tares deducted.....do.....	2,785

Total number of tons of freight carried..... 193,107
 Revenue from freight..... \$667,822.84

All railway charges must be paid in English or Transvaal gold coin.

In computing amounts under 1 sovereign, the railway administration have a fixed rate of exchange, which is: 20 reis Portuguese currency equals 1 penny English or Transvaal currency.

Under date of November 4, 1898, Mr. Hollis sends the following copy of a letter by Alexander Nebel, forwarding agent:

FORWARDING FREIGHT AT LOURENÇO MARQUEZ.

Landing.—On all goods shipped to this port the landing charge—7s. 6d. (\$1.82)—is payable with the freight, and the steamship companies have fixed contracts with the local lightering companies who deliver the freight from the steamers' sides to the wharf.

But if goods are shipped by sailing vessel, the landing charges are payable here and the consignees or their agents are at liberty to make special arrangements with any boating or lighter company to land their goods, provided, of course, that the shipment makes at least a lighter load of 75 tons. The rates for landing in such cases vary, according to the nature of the goods, from 4s. to 6s. (\$0.97 to \$1.46) per ton.

Cranage.—Goods weighing not more than 1 ton apiece are usually discharged at the pier close to the custom-house—the lighter companies paying the orange—and from there are taken charge of by the forwarding agents.

If, however, goods are heavier, or if a shipment consists of heavy machinery of more or less of the above weight, it is preferable to discharge the goods at the railway or "Netherlands pier," as it is called, where they are taken from the lighters by cranes and placed straight into the railway trucks.

The cranage charges at the Netherlands pier are as follows: For packages weighing

less than 1 ton, 4s. 6d. (\$1.09) per ton, less 2s. (48 cents) refunded by the lighter companies, making the net charge 2s. 6d. (61 cents), as per following table:

Railway cramage charges.

	Charges.		Less refund by lightering company.		Net charges.	
	s. d.		s. d.		s. d.	
Packages weighing less than—						
One ton	4 6	\$1.09	2 0	\$0.48	2 6	\$0.61
Two tons	5 0	1.21	2 0	.48	3 0	.73
Three tons	7 6	1.82	3 6	.85	4 0	.97
Four tons	10 0	2.43	4 6	1.09	5 6	1.34
Five tons	11 6	2.79	5 0	1.21	6 6	1.58

It is much easier for the lighter companies to discharge cargo at the Netherlands pier than at the custom-house jetties; therefore the refunds, as stated above, are allowed. For freight landed from sailing vessels special charges are arranged, according to the nature of the cargoes.

Customs charges.—The transit duty charged at this port is 3 per cent ad valorem on the amount of the invoice, including the charges for freight, commission, etc.; or, if the latter charges are not stated, 25 per cent is added to the invoice value of the goods instead. There are many articles, however, on the free list.

Harbor and other dues on transit goods amount to about 7d. (14 cents) per ton.

The loading into freight cars is done by the Delagoa Bay Railway, which charges 6d. (12 cents) per ton for fine freight and half that amount for rough goods.

Agency.—My work as forwarding agent consists of receiving from the lighters, sorting, clearing at both Portuguese and Transvaal customs, and weighing, for which I charge as follows per ton: 4s. (97 cents) for general assorted merchandise; 3s. (73 cents) for special "big lines" in truck loads of 10 tons; 2s. 6d. (60 cents) for goods landed at the Netherlands pier—cramage to be paid extra.

Besides the above-mentioned charges, there remain bank charges—exchange and cash outlays; 5s. (\$1.21) for each entry, and railway charges and Transvaal customs duties.

MADAGASCAR.

The following extracts are from the annual report of Consul Wetter, of Tamatave, dated September 26, 1896:

The transportation facilities—internal, coastwise, and ocean—have been treated of at length in Highways of Commerce (Vol. XII, Special Consular Reports). The only additions or remarks thereon now necessary are that porters are most difficult to secure and have been for months, owing to the disturbed and insurgent condition of the interior, and command nearly twice as much wages as in 1894 for the same trip. The Austrian Lloyds no longer make calls at Majonga or Nossi-Bé, but a new line of French steamers has just commenced calling here and at ports northward to Majonga, on the west coast of the island, whence they go to Mozambique and Lourenço Marquez. This line, the Chargeurs Réunis Line, of Havre, leaves Havre the 15th of each month, Bordeaux on the 18th, Lisbon on the 21st, arrives at Tamatave about the 30th, thence around north coast to Majonga and across to Mozambique and Lourenço Marquez. They quote freight to Bordeaux or Havre, at option, 50 francs (\$9.65) per ton, and to New York 99 francs (\$19.11) per ton; passenger rates are as yet a matter of arrangement with the captains. The Havraise Peninsulaire steamships leave Marseilles the 23d of each month and arrive at Tamatave between the 4th and 8th of each month. They are now quoting freight to Marseilles, Bordeaux, or Havre, at option, at 60 francs (\$11.58). The Messageries Maritimes have now a short and quick service and a long one. The quick service leaves Marseilles the 23th of each month and is due in Tamatave the 14th or 15th of

the following month; the long service leaves Marseilles the 10th of each month, and is due in Tamatave the 5th or 6th of the month following. The return service leaves Tamatave the 18th and 2d or 3d, respectively, and reaches Marseilles the 8th or 9th and 29th or 30th. The quicker service is due to the steamers on the quick run not going to Zanzibar, Mayotte, Majonga, Nossi-Bé, and St. Marie. The means and time of communication with the United States ports continue very difficult and expensive, merchandise having to pass through France and England.

For the convenience of inland transportation the road, or trail, from here to Antananarivo has been much improved; in fact, it is now fairly passable for mule trains, and regular pack trains are to be shortly placed thereon by a French company. Between Ivondro and Andovoranto, on the road to the capital, are now the only difficulties in the way of this mule service, consisting of several long stretches of lakes or water bodies. Work is now going on at Andovoranto, Andavakamenarana, Ampantomaizina, and Tanifotey upon a canal to connect Tamatave and Andovoranto. This work consists of a series of short canals at the places named, between the lakes there meeting and across the narrow stretches of débris and sand accumulations which separate them. This canal system will be navigable for boats of 1 meter (39.37 inches) draft, and the canals will have an average (a minimum) width at their bases of 15 meters (49 feet 2.55 inches). This system will be 102 kilometers (63.37974 miles) in length, and is being carried on at Government expense. Unfortunately, the funds devoted to the prosecution of this work seem to be derived from very uncertain sources, as the work is being constantly suspended for lack of funds; indeed, that is the case at the present moment.

Under date of October 3, 1898, Consul Gibbs says:

The cable service is unreliable, by reason of its many interruptions. The telegraph system of the island is being extended and much improved.

The public roads in the interior have been greatly increased and improved throughout the island. They have not heretofore been used except for Government transportation.

Most of the small rivers intersecting the country between Tamatave and Antananarivo are being bridged, which, together with the improvement of the roads, will shorten the time between here and Antananarivo, the capital.

In my report of September 2, 1898,¹ I sent a prospectus of the railway now in process of construction. The section from here to Ivondro is being pushed as rapidly as the character of the labor and topographical features of the country will admit. The lagoons are being joined in the construction of the Pangolanes Canal to Andovorante.

Rates are unchanged, with the exception of those of the Compagnie Chargeurs Reunis, which have been reduced 50 per cent to Havre and Bordeaux, with an extra charge of 15 francs (\$2.90) for reshipment to Marseilles and London.

¹ Consul Gibbs transmits from Tamatave, under date of September 2, 1898, copy of a concession for a railway from Antananarivo to Tamatave, granted the Colonial Company, of Madagascar, a precursor of the French Society of Railways, of Madagascar, now being organized. Mr. Gibbs summarizes the conditions of the concession as follows: The company must have a capital of 15,000,000 francs (\$2,925,000); its officers must be Frenchmen or French subjects; with the exception of coal, wood, and petroleum, all materials, rolling stock, etc., must come from France or its colonies; the concession must be finally agreed to before January 15, 1899, and lasts for ninety-nine years. This, says the consul, is the largest and most important enterprise ever undertaken in Madagascar.

MAURITIUS.

The following, dated Port Louis, November 26, 1897, has been received from Consul Campbell:

TELEGRAPH AND CABLE SERVICE.

The Eastern and South African cable connects Mauritius with Seychelles, Zanzibar, and Natal. There has been no extension of the company's cable from this point, nor has the telegraph line of the colony connecting the different towns and railroad stations with Port Louis been extended.

TRANSPORTATION.

There are no navigable canals or rivers in the island. There are 370 miles of roads which cost the Government to keep in order during the year 1896, 244,300 rupees (\$57,166). One new bridge has been opened this year in the vicinity of Port Louis.

The only other means of transportation for passengers and freight in Mauritius are the northern and midland lines of railroad, which have a common depot in Port Louis. The lines are owned by the colonial government and are placed under the management of a general superintendent.

LINES OF STEAMERS CONNECTING MAURITIUS WITH EUROPE.

There are four lines of steamers touching at this island, three English and one French. Two of the former lines proceed via the Cape. The French line and one of the English take the canal route. The boats of the first arrive and depart from here on regular schedule time, being under contract with the colonial government to carry the mail. The others come and go at very irregular dates.

There is no direct communication between Mauritius and the United States, and in order to insure anything like quick dispatch it will be well to mark all letters via Marseilles, otherwise they may be detained in England and forwarded by any of the lines.

MOROCCO.

Consul-General Burke, of Tangier, under date of October 6, 1897, sends the following:

STEAMSHIP COMPANIES TOUCHING AT TANGIER.

Papayanny Line of steamers (English): Regular service between Liverpool, Tangier, Malta, and Alexandria, calling at Tangier about every twelve days.

Mersey Steamship Company, Limited (English): Regular steamers between London, Gibraltar, Tangier, and the coast towns.

Bland's steamers (English): Running between Gibraltar and Tangier.

Compagnie de Navigation Mixte (French): Between Oran and Tangier.

Compagnie Paquet (French): From Marseilles, Gibraltar, to the coast towns and Canary Islands.

Oldenburg Portugiesische (German): Monthly steamship service between Hamburg, Antwerp, Gibraltar, Tangier, and the coast towns.

Woermann Line: Hamburg to Casablanca.

The Sloman Line: From Hamburg to Tangier, Malaga, Barcelona, and Italian ports.

The Royal Line: From Amsterdam, Lisbon to Tangier, Gibraltar, and Italian ports.

Under date of Tangier, October 24, 1898, Consul-General Gummere says:

During the past year there has been no extension of telegraph and cable service. The Eastern Telegraph Company is the only company represented in Morocco, and Tangier is the only town in which it has an office.

The transportation facilities remain the same. No American vessels touch in any port in Morocco, nor do vessels touch here going to or coming from the United States.

As there are no railways, canals, or river systems in Morocco, the merchants here are compelled to use camels, horses, and donkeys for transporting merchandise to and from the interior and the coast towns. This is necessarily slow work, and sometimes it takes more than two weeks to bring goatskins or other merchandise from Fez to Tangier, a distance of only 200 kilometers (124 miles). There have been no changes in caravan routes. Owing to the lack of direct steamship lines from Morocco to the United States, exporters generally ship from Tangier, Casablanca, and Mogador by way of London. By this route it takes anywhere from six weeks to two months for goods to reach the United States. Occasionally, shipments are made by way of Gibraltar or Marseilles, which takes less time, but is more expensive. The rate from here to the United States via London on goatskins, which is the principal article of export, is about 55 shillings (\$13.36) per ton.

COMMUNICATION WITH CASABLANCA.

Commercial Agent Cobb, of Casablanca, under date of November 22, 1898, sends a statement as follows:

Rates of freight between different countries and the port of Casablanca, Morocco, 1898.

Between Hamburg and Casablanca: Woerman Line, freight on heavy goods per ton weight, 17.50 marks (\$4.17); freight on light goods per ton measurement, 30 marks (\$7.14).

Oldenburg Line between Hamburg and Casablanca: Same as Woerman Line.

Mersey Line between London and Casablanca: Freight on heavy goods per ton weight, 17 shillings 6 pence (\$4.26); freight on light goods per ton measurement, 30 shillings (\$7.30).

Spanish subsidized line: Freight from Cadiz to Casablanca per ton, 30 francs and 10 per cent (\$5.79); freight from Casablanca to Cadiz, 16.50 francs (\$3.18).

Spanish Haynes Line: Freight is mostly by special arrangement, but averages between Casablanca and Gibraltar 15 pesetas (\$2.90) per 1,000 kilos (2,204.6 pounds).

French line between Casablanca and Marseilles: Freight between Casablanca and Marseilles, from 2.50 to 5.50 francs (48 cents to \$1.06) per 100 kilos (220.46 pounds) for weight, and for measurement 25 francs (\$4.83) per cubic meter (35.3166 cubic feet).

Transportation facilities of different countries with the port of Casablanca, Morocco, 1898.

English line of steamers, Mersey Steamship Company, Limited; agent in London, Forwood Bros. & Co.; agents in Casablanca, Murdoch, Butler & Co. At present these boats sail from London weekly, and after touching at the Morocco coast ports they proceed to the Canary Islands, filling up there with bananas, tomatoes, etc., and thence go direct to London without calling at the Morocco coast ports on the return voyage. Sometimes after leaving the Canary Islands they call at Madeira and thence go direct to London. The weekly sailings are sometimes altered to once in ten days, according to freight offering. Time occupied on voyage, London to Casablanca, eight days.

Spanish subsidized line of steamers; agent in Casablanca, Mr. Adruban. Sailing from Cadiz once a month, calling at Morocco coast ports both on outward and return voyage. Cadiz to Casablanca, three days' voyage.

Spanish Haynes Line of steamers; agent in Casablanca, Mr. Lapeen. These boats sail from Gibraltar, calling at Morocco coast ports, but there is no regular service or fixed sailing date. Time occupied on voyage, Gibraltar to Casablanca, four days.

German line of steamers, Woerman Line; agents in Casablanca, Messrs. Brandt & Toel; sailing once a month from Hamburg, sometimes calling at Antwerp. These steamers, after calling at the Morocco coast ports, proceed to the Canary Islands, and thence go south to ports on the West Coast of Africa. On the return voyage two boats a month call here. Time occupied on voyage, Hamburg to Casablanca, twelve days.

Oldenburg Line, German; agent in Casablanca, C. Lamb. Boats sail from Hamburg on the 15th of each month, calling at Antwerp, which port they leave on the 20th. These boats call at all the Morocco coast ports, but do not go to the Canary Islands or to the West African ports. Time occupied on the voyage, sixteen days.

French line of steamers, N. Paquet & Co., Marseilles; agents in Casablanca, Mr. Canepa. Sailing from Marseilles twice a month—on the 7th and 22d. These boats, when freight offers, call at the Canary Islands, but when there is no inducement they simply go down the Morocco coast ports and return the same way to Marseilles. There are other boats in this line, which make additional sailings when there is a pressure of freight. Time occupied on voyage, Marseilles to Casablanca, seven or eight days.

SIERRA LEONE.

Consul Williams writes from Sierra Leone, October 31, 1898:

Great Britain, France, Germany, and Spain have regular steamship lines to Sierra Leone, and there are occasional steamers from the other European countries. The United States is much behind in this respect, only sailing vessels paying occasional visits.

The British and West African Steamship Company has recently launched another vessel in Liverpool for the West Coast service, with improved passenger accommodations. The tendency now in the steamship service between Sierra Leone and Liverpool is to gradually replace the slower by faster and more efficient vessels. This may be taken as an indication of the future prospect for business with Sierra Leone and the sister colonies of the West African Coast, the trade of which has been so long overlooked.

The United States needs direct steamship communication with the West Coast. With this established, the field is ours.

RAILROAD AND TELEGRAPH.

The work upon the Sierra Leone Railway,¹ which was stopped by reason of hostilities, has been resumed. This leads into the rich Hinterland from Freetown. Twenty six miles have been completed, and 22 miles have daily service.

A Government telegraph connects Sierra Leone with the outside world.

¹ Under date of April 10, 1897, Consul Pooley reports the opening of this line. He says:

“On the 29th ultimo I received an official invitation to be present at the opening of the completed portion of the railroad from Freetown toward Wellington, say, 7 miles, being the first railway opened in British West Africa. The line is also being laid in sections from the landing place in Freetown (at which terminus large and commodious wharves are to be built out in the river to enable steamers to discharge and receive cargoes) to Waterloo, a distance of 20 miles, or, say, two-thirds of the present proposed line to Songa Town.”

SOUTH AFRICA.

Consul-General Stowe transmits from Cape Town, under date of April 18, 1898, the following statement:

The steam railways in South Africa are as follows:

The Cape Government Railways. General manager, C. B. Elliott, Cape Town.

The Orange Free State Railways. Director-general, R. E. Brounger, Bloemfontein.

The Netherlands South African Railway Company. Managing director, G. A. A. Middleberg, Pretoria.

The Natal Government Railways. General manager, D. Hunter, Durban, Natal.

The Bechuanaland Railway Company, Limited. Secretary, J. A. Stevens, Cape Town.

The Indwe Railway Company. Managing director, Colonel Schermbrucker, Cape Town.

The New Cape Central Railway Company. Agent, Sir Thomas Scanlen, Cape Town.

The Pretoria-Pietersburg Railway (in construction). General manager, G. Mayo, Pretoria.

The Grand Junction Railways, Limited (in construction). Secretary, S. Tonkin, Cape Town.

Kowie Railway Syndicate. Manager, H. Putt, Grahamstown.

Portuguese Railways, Mozambique. Engineer director, C. Albers, Lorenzo Marquez, East Africa.

Particulars of the Cape Government Railways I have pleasure in appending, but for details as to the other railways mentioned I must refer to the principal officers named in each.

The principal officers of the Cape Government Railways, besides the general manager, are: Engineer in chief, John Brown, Cape Town; chief locomotive superintendent, H. M. Beatty, Salt River; chief traffic manager, T. R. Price, Cape Town; financial secretary, James Easton, Cape Town; accounting officer, A. J. Robb, Cape Town; chief railway storekeeper, W. Sinclair, Cape Town; agent general in London, Sir David Tennant, Westminster; commercial agent in New York, M. Berliner, Whitehall street.

The Cape Government Railways are divided into the following four systems:

Western system, 592 miles open, from Cape Town to De Aar, including the Malmesbury, Sir Lowrys Pass, Wynberg, and Simonstown branches.

Midland system, 704 miles, from Port Elizabeth to De Aar, including the Grahamstown and Colesberg branches.

Eastern system, 331 miles, from East London to Bethulie Bridge, including the King Williams Town and Aliwal North branches.

Northern system, 273 miles, from De Aar to Vryburg; principal station, Kimberley; no branches.

There are at present no lines under construction by the Government or by contractors on behalf of the Government. Several routes are, or have been lately, under survey; but I am not at present in a position to say anything as to the prospects of building.

In a report dated June 30, 1899, Mr. Stowe sends a table showing the condition of certain lines on December 31, 1898, as follows:

GOVERNMENT LINES.

	Length.	Locomotives.	Carriages.	Trucks and other vehicles.
	<i>Miles.</i>			
Western	865	229	377	2,876
Midland	794	186	169	4,053
Eastern	331	94	43	911

PRIVATE LINES.

Port Nolloth and Ookiep	92			
Grahams Town and Port Alfred	42½			
Worcester and Montagu	42			
Cape Town and Sea Point	3½			
Indwe Rwy	66½			
Bechuanaland	112			

Under date of October 18, 1898, Mr. Stowe gives information as to railways in Natal, as follows:

The revenue of the Natal railways in the last two years was:

1897	£1,051,359 = \$5,116,439
1896	1,136,213 = 5,529,381

The working expenditure in 1897 was £583,088 (\$2,837,598). The Webb & Thompson electric staff system has been introduced, and part of main line (83½ miles) relaid with 80-pound steel rails (29,893 tons). One hundred high-sided wagons (cars) have been made in the colony, and 100 low-sided wagons (cars) made in England have been bought; these cars carry 22 tons each.

Men employed: Assigned Indians, 1,259; free Indians, 727; natives, 628; total, 2,614.

Total length of railway opened for traffic, 458½ miles.¹

Statement of traffic.

Passengers carried	1,031,171
Receipts from passengers	\$1,021,035
Receipts from horses, carriages, parcels	\$90,055
Receipts from rents, mails, etc	\$46,441
Receipts per train mile	\$2.11
Receipts from goods (freight) traffic	\$3,958,903
Freight carried:	
General merchandise	tons.. 218,889
Sugar	do... 21,653
Coal	do... 180,570
Minerals	do... 110,669
Timber	do... 45,004
Wool	do... 51,810
Hides	do... 1,873
Corn, potatoes, etc	do... 86,628
Sugar cane	do... 7,687
Firewood	do... 3,682

¹ Under date of June 30, 1899, the consul-general shows that the number of miles open on December 31, 1898, was 475.

Live stock	number..	67, 650
Rolling stock on hand:		
Engines		117
Tenders		12
Eight-wheel cars, passenger.....		134
Six-wheel cars, passenger		114
Four-wheel cars, passenger.....		20
Eight-wheel cars, freight.....		987
Six-wheel cars, freight.....		588
Four-wheel cars, freight.....		247

FREIGHT RATES.

Under date of Cape Town, April 1, 1898, Consul-General Stowe, states:

I think that shippers from the United States to this country have no reason to complain of the freight rates, as compared with those from other countries, although some of the vessels that transport American goods to the ports of South Africa are owned in those very countries.

The New York rate is now about \$2 per ton of 40 cubic feet less than from Hull, England. At one time the difference was greater in favor of the United States, but complaints by other countries brought about a reduction in their favor. With better docking facilities and cheaper coal for homeward voyages, freights must be, in time, materially reduced.

Recently a new German line of steamers, known as the German-Australian Steamship Company (the Deutsch Australische Dampfschiffs Gesellschaft), has entered the field and will cause keen competition, as a reduction of 25s. (\$5.85) per ton is offered to Port Elizabeth, on the African coast. The service will be every four weeks from Hamburg and Antwerp, but goods are also taken from other ports in Europe and for other ports in South Africa. From June, 1898, the service will be doubled and made fortnightly. The company is an old established one, and is not dependent upon this trade alone; being thus free from the consideration of return cargo from South Africa, which plays such a part in the high rates of existing lines.

RAILWAY CONSTRUCTION IN THE TRANSVAAL.

The Department has received a report from Consul Macrum, of Pretoria, dated June 13, 1899, announcing the publication in the Government Gazette of a request for tenders for the building of: (1) Railway from Belfast, via Dullstroom, to Lydenburg, connecting at Belfast, or vicinity thereof, with the railway line from Komatipoort to Pretoria; (2) railway from Pretoria, connecting at the Pietersburg-Pretoria railway station, via Skinnerscourt and Krokodilpoort, to Rustenburg.

ST. HELENA.

In his report in Commercial Relations, 1895-96, Consul Coffin says that the facilities for transportation are via England, by mail steamers, monthly, which remain in the port only long enough to discharge what cargo they have for this port. Cargo is discharged at the rate of 150 tons per day of ten hours, and the steamers are allowed to work nights and Sundays discharging. The steamers bring to the island

from 50 to 150 tons of cargo monthly, and remain in the port from five to ten hours. The homeward mail steamers, which arrive ten days after the outward, bring from 5 to 30 tons of cargo, generally. The rates of freight from England and Cape Town are excessive, as there is no competition.

There are no coastwise or internal routes or railways; mail service is by steamers.

Consul Pooley, in a report to appear in *Commercial Relations*, 1899, gives the following schedule of mails for St. Helena for the next six months: Mails will leave Southampton September 30, 1899; October 28, 1899; November 25, 1899; December 23, 1899; January 20, 1900; February 11, 1900.

CABLE CONNECTION.

On June 30, 1898, Consul Pooley writes:

It is stated that the Imperial Government has decided upon laying an "all British submarine cable," with the following connections: Penzance, Cornwall, England, to Gibraltar, 1,200 miles; Gibraltar to Sierre Leone, 2,400 miles; thence to Ascension, 800 miles; Ascension to St. Helena, 800 miles; St. Helena to Cape Town, 1,800 miles; total distance, England to Cape Colony, 7,000 miles. The Telegraph and Maintenance Company's steamship *John Pender* has been engaged in making the necessary soundings, having left Cape Town on May 12 and arrived here May 19. After sounding around the island, it left on May 25 for Ascension, Sierra Leone, Gibraltar, and England. The connection by cable with the "mother country" will be the greatest boon ever conferred upon St. Helena, for the reason that hundreds of merchant sailing ships from the East, which under existing arrangements go out of their way to call at the Brazils, Cape Verde, and the West Indies for orders, will avail themselves of this station, St. Helena being situated in the heart of the southeast trade winds, and consequently in the direct track of ships from India and China bound to the continents of Europe and America.

TUNIS.

The *Journal des Débats*, of Paris, says that during the last ten years railroads to the extent of over 300 miles have been constructed in Tunis, of which 195 are of ordinary and the remainder of narrow gauge. The article continues:

During the last ten years 134,000,000 francs (\$25,862,000) have been spent in Tunis in public works, 34,000,000 francs (\$6,562,000) on ports, 1,500,000 francs (\$279,500) on light-houses and buoys, 65,000,000 francs (\$12,545,000) on railways, 12,000,000 francs (\$2,316,000) on roads, 10,500,000 francs (\$2,026,500) on public buildings, 2,500,000 francs (\$482,500) on sewers, and 1,300,000 francs (\$250,900) on aqueducts, etc. Roads to the extent of 1,708 kilometers (1,061.29 miles, have been constructed.

PROPOSED SAHARA RAILWAY.

A recent article in the *Engineering Magazine* gives the following details in regard to the proposed railway across the Sahara:

In view of the growing strength of England in Africa, the construction of a railway crossing the Desert of Sahara, and uniting the French colonies of Algeria and Tunis with the fertile country about Lake Tchad, is urged as a political and military necessity.

There is now a railway about 250 kilometers (150 miles) long from the port of Sfax, on the Mediterranean, to Gafsa, in the interior of Tunis, where a valuable deposit of phosphate rock is found, from which annual shipments of over 300,000 tons are now made. The general conditions of railway construction in this country are well known, and it may be assumed without serious error that the prolongation of the Sfax-Gafsa railway across the desert could be made at about the same cost per mile as that portion already built. The climate is about the same, water is found at frequent intervals, and the topography does not greatly differ from that of the existing railway. It may, therefore, be estimated that the entire 2,000 kilometers (1,240 miles) could be completed at the cost of 60,000 francs per kilometer, including rolling stock, or a total of 120,000,000 francs (\$24,000,000); and even if this amount be increased by one-half to provide for unforeseen contingencies, it is yet far within the estimate of twenty years ago, which reached the enormous sum of over 800,000,000 francs.

Apart from the strategical value of such a railway, there is some probability that its construction would have the effect of developing materially the natural resources of the country through which it would pass. As a matter of fact, the real value of this portion of Africa is but imperfectly known. It is but a short time since the phosphate deposits of Algeria began to be worked, and even now, with proper transportation facilities, the present output of these beds could readily be increased to over a million tons per year. For some time there has been reason to believe that there exist in the interior of the Sahara important deposits of nitrates, which only need accessibility to rival those of Chile, and there are salt deposits already known to be awaiting development on the Sudan frontier.

These sources of traffic, however, are almost entirely in prospect; there is every reason to assume that the primary reason for the construction of a railway across the desert is that of extending and at the same time consolidating French power in Africa, and meeting the British colonial expansion in that continent by anticipating her in railway construction.

It is especially interesting to the engineer to note that in the attacks which are being made by nearly all the nations of Europe for permanent territorial hold in Africa, engineering work is depended upon as a more certain and enduring form of attack than military power, and that the railway, canal, and harbor are the real weapons in the conquest of a continent.

ASIA.

GERMAN ASIATIC STEAMSHIP LINE.

Official organs inform the Empire that Germany is to send out ships, alternately from Bremen and Hamburg, that will make the trip in four-teen days to eastern Asia. The Lloyd and Hamburg lines are united in this enterprise. The ships are passenger and freight, are 520 feet long, 60 feet wide, and 38 feet deep, and register 10,000 tons. The displacement is 18,000 tons; the carrying capacity, 10,000 tons. There are to be four ships of the *Kaiser Wilhelm der Grosse* class, which can carry 300 first cabin, 100 second, and a large number of steerage passengers. They will call at all important eastern cities, including Colombo, Penang, Singapore, Shanghai (two days' stay), Nagasaki, Hiogo, and Yokohama, where a seven days' halt is made; then by the same route

back to Bremen or Hamburg. The branch line, Hongkong-Japan, is to be dropped, as the main line goes direct to Japan.

J. C. MONAGHAN,
Consul.

CHEMNITZ, September 9, 1899.

An article in *Transport*, London, September 22, 1899, gives the following additional details:

The *Konig Albert*, of the Norddeutscher Lloyd, sailing from Southampton on October 8, will inaugurate the fortnightly German imperial mail service to China and Japan. At present the service is monthly, and, like the English service, consists of a line to Hongkong, where transshipment is made into a smaller steamer belonging to the same company, which continues the service to Japan. The new service will do away with the transshipment.

Penang will be added to the ports of call, and here, by arrangement with the British India Company, one of the latter's steamers will connect with the mail steamer to take passengers and freight for Rangoon. The British India steamer will sail within twenty-four hours of the arrival of the German boat, and the journey to Rangoon will be performed in about three days, so that the entire journey between London and Rangoon may be accomplished in twenty-five days. In place of the present Norddeutscher Lloyd service between Singapore and Deli, connecting with the mail line, an improved service will be opened between Penang and Sumatra. The branch line between Singapore and New Guinea, via Batavia, will continue unaltered, and negotiations are in progress for a regular connection at Singapore with the steamers of the Dutch Batavian Line, the Koninklijke Paketvaart Maatschappij, for Java, Batavia, Samarang, and Surabaya. From Shanghai the mail steamer will proceed to Nagasaki, and thence through the famous Inland Sea to Hiogo and Yokohama. For Kyaochan connection will be made at Shanghai with the steamers of Messrs. Diederichsen, Jebsen & Co.

The vessels will be of a similar size and type to the *Konig Albert*, and are now being completed at the yards of the Vulcan Shipbuilding and Engineering Company, Stettin.

ADEN.

Consul Cunningham writes from Aden, September 27, 1898:

I send herewith a list of the steamship lines which touch at this port. This does not, of course, include tramp steamers. The irregularity of arrival of the boats bound for New York reduces the amount of cargo they would otherwise receive. Most of the goods sent from here go by German or British Indian lines, and transship at Naples, Genoa, and London.

As is known, Aden is the collecting point for exports from Somaliland and part of Abyssinia, and the distributing points for such articles as are imported. Goods are transhipped here by coast steamers to Zeila and Berbera and thence carried 200 and 300 miles into the interior of Africa by camel caravans. The freight rates charged by coast steamers on cotton goods and petroleum (the only imports of consequence from the United States) from here to Hodeida (Arabia), Zeila, Bulhar, or Berbera (Africa) are about 7s. (\$1.705) per ton of 2,240 pounds. Other goods are shipped to the coast at about the same rate. The freight on articles from Aden to New York is: Skins and hides, 70 rupees (about \$22.40) per ton of 2,240 pounds; coffee, 40 rupees (about \$12.80) per ton.¹

¹ Rupee reductions made by the consul.

Steamship lines at Aden.

Name of line of steamships.	Home address.	Terminal ports.	Trips.	Nationality.	Local agent.
Peninsular and Orient	London	London to Australia.	Fortnightly	British	Peninsular and Orient Co.
Do	do	London to Bombay.	do	do	Do.
Do	do	Aden to Bombay.	do	do	Do.
North German Lloyd	do	Bremen to Australia	do	German	S. Smuck.
German East African	Hamburg	Hamburg to Durban	do	do	Aden Coal Co.
American and Indian	Bucknall Bros. London.	New York to Calcutta.	Monthly	British	Do.
British India	23 Great Winchester street, London.	London to Calcutta.	Twice a month.	do	Coweisju Du shaw Bros.
Do	do	London to Zanzibar.	Monthly	do	
Austrian Lloyd	Trieste	Trieste to Bombay.	do	Austrian	
Do	do	Trieste to Kolu.	do	do	
Bombay and Persia	Bombay	Bombay to Jeddah.	do	British	
Anglo-Arabian Co.	London	London to Persian Gulf.	do	do	
Owaajee Coast Line steamship.	Aden	Aden to Zaila Berbera, Bulha, and Hodeida.	Every 5 days	do	
Messrs. Barber & Co.'s steamship.	New York	New York to Japan.	Irregular	do	
Wilson's Line steamers.	Hull	Hull to Bombay and Kurrachee.	Monthly	do	Luke Thomas & Co.
Hamburg-American Line.	Hamburg	Antwerp and Hamburg to East.	do	German.	Do.
James Woorack & Co	Constitution street, Leith.	London and New York to East.	Irregular	British	Do.
Alfred Holt Line	Water street, Liverpool.	Liverpool to China.	Weekly	do	Do.

TELEGRAPH LINES, INTERIOR TRANSPORTATION.

Under date of October 5, 1898, the consul says:

Aden is in easy telegraphic touch with all parts of the civilized world. There is a station of the London and India cable here, and, in addition, subordinate lines to East and Northeast Africa.

Between here and India the rate of postage is the same as Indian inland postage on all classes of matter, and the Indian postage stamps are used. The foreign postage at present is the same as between all nations which belong to the Postal Union. The new penny postage, which is to go into effect in the near future between Great Britain and India, will extend to Aden and give this place the same rate to Great Britain as is given India.

Transportation from Aden to neighboring ports of Arabia and Africa is by small steamers and native sailing vessels. From here to the interior of Arabia run numerous camel caravans, bringing out coffee, skins, etc., and carrying back supplies to meet the meager wants of the natives. There is not a railroad in my consular district that is in operation (the one from Djibouti is not yet finished).

The time necessary for cargo to go from here to New York is from twenty-five to forty days. Recently, some cargo was landed in New York in twenty-four days after shipment from here, but this is exceptional.

BRITISH INDIA.

RAILWAYS.

Consul-General Patterson writes under date of Calcutta, August 31, 1899:

The total length of railways open and sanctioned on the 31st of March, 1899, after allowing for minor connections, was 26,059 miles, being a net increase of 604 miles during the year. The total length of railways open for traffic on the same date was

22,491 miles, being a net increase of 1,331 miles, leaving 3,568 miles still under construction or sanctioned.

The mean mileage worked during the calendar year was 21,475 miles, being an increase of 944 miles over the figures of the previous year.

The total capital outlay on railways open to traffic amounted on the 31st of December, 1898, to \$857,690,000, an increase of about \$27,000,000, as compared with the expenditure incurred to the end of 1897.

The gross earnings in 1898 amounted to \$87,885,561, or \$5,981,012 more than in the previous year; and the net earnings amounted to \$16,079,621, being an increase of \$4,210,904, leaving a profit on the capital expenditure of 5.37 per cent, against 5.04 per cent in 1897.

The passenger tariff rates (average) per mile were: First-class, 2.36 cents; second-class, 1.13 cents; intermediate class, 0.56 cent; third-class, 0.3 cent.

Tariff on freight per ton per mile (average) was as follows: First-class, 1.59 cents; second-class, 2.34 cents; third-class, 3.6 cents; fourth-class, 4.12 cents; fifth-class, 5.55 cents.

The number of passengers carried in 1898 was 152,584,320, an increase of 1,320,505 over the previous year.

The aggregate of freight carried in 1898 was 36,350,900 tons, an increase of 2,652,283 tons over 1897.

The rolling stock was as follows in 1898: Locomotives, 4,335; passenger cars, 12,814; freight cars, 80,708.

It will be seen by the above that the mileage remaining under construction or sanctioned on the 31st of March, 1899, was 3,568 miles. Improvements are being made on the railways now open for traffic, to which I would call the attention of our manufacturers of locomotives, bridges, steel rails, cars, and other railway supplies, as it has been demonstrated that they can compete successfully for contracts for such supplies. Last year 7,000 tons of steel rails were delivered in Calcutta from the United States, and now I am informed that the Baldwin Locomotive Works have a contract for ten freight engines for the Bengal State Railway, besides three or four passenger engines for the Bengal Central Railway, and that the Burma Railway, the Bombay Baroda, and the Central India railways also have made such purchases.

To ascertain what supplies are required and when contracts will be let our manufacturers should correspond with Sir A. M. Rendel & Son, consulting engineers, 8 Great George street, Westminster, SW., London, for Indian state railways, East Indian Railway, Bengal and Northwestern Railway, Southern Mahratta Railway, and the Bengal Central Railway; and with Sir George B. Bruce, consulting engineer, 3 Victoria street, London, SW., for Great Indian Peninsular Railway, and Indian Midland Railway, and South Indian Railway. They should correspond with the director-general of stores, India Office, London, with reference to contracts for supplies for the railways worked by the state.

COMMUNICATION WITH BOMBAY.

Consul Comfort, of Bombay, September 4, 1897, says:

The Austrian Lloyd Steam Navigation Company maintains a regular line of steamers between Trieste and Bombay, running twice each month. The Compagnie des Messageries Maritimes has monthly service between Marseilles and Bombay. The Florio Rubattino Line also runs steamers monthly between Genoa and Naples and Bombay. There is also a Japanese line making regular trips between Bombay and Japanese ports. Sailing vessels are generally owned by natives of India. Few of the latter carry more than 100 tons of freight.

DIRECT STEAMSHIP LINE TO INDIA.

Consul-General Patterson, under date of Calcutta, January 5, 1898, writes:

A line of steamships has been established between New York and India, to touch at Bombay and Calcutta, of which Norton & Sons, of New York, are the agents. This will give our manufacturers and shippers direct communication with India without transshipment, of which they should take advantage. If they will make the proper effort, millions of dollars of additional trade with this country will be the result. I would suggest that, through the Department, the attention of the manufacturers be called to this line, especially that of the manufacturers of railway supplies, locomotives, mill machinery, agricultural implements, bicycles, cotton piece goods, etc.

 CEYLON.

The *Recueil Consulaire*, Vol. XCIX, Brussels, 1898, says:

The total length of railways in operation throughout the island of Ceylon in 1897 was 1,217 miles. They traverse a most uneven country, the altitude varying from zero at Colombo to 6,300 feet near Nanwoya. The first railway constructed on the island was from Colombo to Kandy, a distance of 74 miles; the average grade was 1 to 45, and the cost about £1,700,000 (\$8,273,050). This road was afterwards prolonged 17 miles to Nawalapitiya, and later a branch road was built from Kandy to Metale, 17½ miles. South of Colombo the line was extended to Kaloutara, 27½ miles. In 1885 a railway was built from Nawalapitiya to Nanwoya, 41½ miles farther in the interior and situated at an altitude of 5,600 feet. In 1894 the line from Nanwoya was extended to Bundiarawela, 29 miles. The coast line has been extended from Kaboutawa to Matara, 100 miles from Colombo. All these lines are broad gauge, but the present government seems disposed to favor the construction of narrow-gauge roads, which will join the principal lines and open up the chief agricultural centers of the island.

 CHINA.

RAILWAYS.

The railways of China cover an extent of about 350 miles. They connect the capital, Peking, with Tientsin, running thence to Shanhaikwan, and also to Paoting. They belong to the Government. Many other lines are projected. Consul Read, of Tientsin, under date of October 14, 1897, gives the following information as to the railway system:

The extension from Tientsin to Peking known as the Lukouchiao section is now completed, with the exception of the laying of the double track, and trains are running regularly to and from Peking. The length of this extension is 79.68 miles.

The line from Tientsin to Shanhaikwan, the eastern terminus of the Great Wall, on the Gulf of Pechili, is 173.73 miles.

The extension beyond Shanhaikwan into Manchuria, which extension will in time reach Moukden and Kirin, is 40.12 miles. The total length of railways in operation in North China is therefore 293.53 miles.

The first section of the Lukouchiao-Hankau line from Pekin to Paotingfu is under construction, and when completed another 80 miles will have been added to the railway system.

The line into Manchuria is also being extended slowly.

From Pekin a line is contemplated to Kalgan. Kalgan is 110 miles northwest of Pekin and is the center of a large carrying trade, the main exports to Tientsin being wool, hides, and furs. Kalgan is also a chief emporium of the tea trade with Mongolia and Siberia.

From Paotingfu to Tai Yuanfu, the capital of the province of Shansi, a railroad is also contemplated.

An interesting fact connected with the Tientsin-Pekin line is that an American firm, Messrs. Burnham, Williams & Co., of Philadelphia, the well-known makers of the Baldwin locomotives, has supplied this section of the railway with twelve locomotives to meet the needs of the anticipated traffic.

Under date of July 19, 1898, Consul Ragsdale, of Tientsin, gives the following additional details:

The Imperial Chinese Railway Company has 64 engines of Chinese make, 4 Belgian, 21 American, and 38 English. From 8,000 to 12,000 men are constantly employed, 42 of whom are foreigners. There are extensive shops at Tong Shan, where cars of all kinds are built. The cross-ties and bridge timbers are imported, principally from Oregon, although small shipments, far inferior in quality, are received from Japan. The road is gradually being extended and ere long will be completed to Niuchwang, one of the terminal points of the Russian railway. The traffic for the past eleven months was as follows: Passengers carried, 1,216,885; freight, 1,870,118 tons. The traffic is rapidly increasing, and already the road is paying handsome dividends.

PEKIN-HANKAU RAILWAY.

Consul Jones writes from Chinkiang, October 12, 1897:

This road will be a long one, 600 or 700 miles, with many streams to cross and bridges to construct. At the rate of progress made by the Woosung line it is too much to ask when this road will be completed. The route from Hankau to Pekin is an unfrequented one, with few towns intervening and a sparsely settled country, so that the enterprise is scarcely expected to be remunerative. It is intended, however, to be a strategic line for military purposes, and that, of course, makes all the difference.

Consul-General Goodnow sends from Shanghai, under date of July 28, 1898, the text of the contract between the director-general of the Chinese railways and the Belgian syndicate for the construction of a railroad from Lukouchiao to Hankau. The contract provides that the General Railway Company is to undertake the construction of the Lou-Han line.

As the Lou-Han line must be first completed on one side by the trunk line of Lukouchiao to Paotingfu—145 kilometers (90 miles)—and on the other side by the trunk line of Hankau to Singyeng—247 kilometers (158.4 miles)—the General Company is to proceed with the construction of these two trunk lines, and with its capital of 13,000,000 taels to furnish all the material for construction and rolling stock for the beginning of the trunk lines. Excepting the trunk line of Lukouchiao to Paotingfu, the construction of the entire Lou-Han line will be given by the General Company to the representative of the Belgian syndicate,

who, acting for the General Company, will undertake the direction, supervise the construction, survey, make plans and estimates, oversee the work, and order the ballast and materials for its execution. All the plans, estimates, projects, etc., must be submitted for approbation by the superintendent of the General Company.

PROPOSED GERMAN RAILWAY.

Under date of April 13, 1898, Consul Fowler, of Chefoo, sends a newspaper clipping giving a description of the probable route of the railway from Kyaochau to Chinanfu. Besides this route, adds the consul, the Germans have obtained the right to construct a railroad to Ichowfu and thence to Shanghai. The clipping reads:

After rounding the north end of the bay there are two advantageous routes to Weihsien—one via Kyaochau and Kaomi cities across the Kaomiwa (an ancient lake once drained but still subject to floods in the rainy season) and by a slight southerly detour via the coal deposits 12 miles south of the city. The other route follows the cart road, passing north of Kyaochau and Kaomi cities, bridging the Hwaiho below its confluence with the Yunho, and thence west 15 miles to Weihsien. Both routes are nearly the same in distance. The southerly one has the advantage of tapping the trade of two cities and the coal mines, while the northerly route traverses a district less threatened by floods and avoids an extra bridge by crossing below the confluence of two rivers. Whatever route be selected, Weihsien city is bound to be the first important point. The geographical location of this city makes it very important as a distributing center for central Shantung. Eleven arteries of trade converge here, giving the place a wide reputation for wholesale business. By the primitive means now at command large quantities of foreign goods, such as cloth, yarn, iron, and kerosene, are transported from Chefoo, as well as still larger consignments of native goods from southern markets. All this commerce is coastwise, and hence will find a natural and convenient inlet at Kyaochau by junk and steamer. Such merchandise destined for so southerly a point as Ichowfu city has been heretofore forwarded via Chefoo and Weihsien because of the exorbitant tolls levied at the Grand Canal. From this city west to Chinanfu the railway has a choice between the line of the cart road, which trends to the northwest to escape the hill ranges, and, after passing the precipitous heights at Tsoup'ing, takes a dive (southwest) to the capital. The other route passes through the mountains by a tortuous succession of valleys, tapping the mineral deposits of Chihch'uan and Po-shan, the latter being rich in coal and fire clay.

INTERNAL TRADE ROUTES.

Outside of the foreign settlements, with their macadamized streets, there is scarcely a road in the whole Empire that deserves to be called a road. Exception must be made of a drive some 5 miles in length, recently built by Chang Chitung at Nankin, and a few miles of roadway, built some years ago at Tientsin under the direction of Li Hung Chang, the beginning of a highway to Peking. The road through the pass from Nankeo to the Great Wall is also fairly well built and kept in tolerably good condition.

The ordinary road is a mere path, generally undefined by ditches or hedges, winding through the paddy fields or over the uplands,

wherever the traveler can find the fewest obstacles to his progress. In the north, where carts are used, it is a common thing to see a new track cut right across a field of growing wheat in spite of the efforts of the owner to prevent it. A few attempts have been made at various times in the past to construct good roads such as those from Tungchow to Peking, Hanchung to Chintu, and from Nankin to Fungyang, but for lack of proper repairs they were soon permitted to fall into ruin. The road from Nankin to Fungyang, 120 miles in length, was built by the founder of the Ming dynasty, who made Nankin his capital. It was a creditable piece of engineering. The roadway is some 25 feet wide, and in some places built up 12 to 15 feet above the surrounding country. There are remains in many places of ancient pavement, but this has almost wholly disappeared, and the road is simply a bank of earth which in rainy weather becomes altogether impassable. There are three splendid bridges of the road, built of stone, one of five one of seven, and another of ten arches. Bridge building is regarded as a virtue in China, and there are some fine specimens in all parts of the country. In the neighborhood of the cities in central China the roads are partially covered with a pavement about 5 feet wide, composed of old bricks set on edge, with sometimes a line of cut stone in the middle for wheelbarrow traffic. On the larger rivers, which Chinese engineering skill has not been equal to bridging, there are ferries on which men and animals, carts and barrows, are carried across for a few cash. For crossing the Yangtse at Nankin the fare is 35 cash (2 cents United States money) for each passenger, 100 cash (5 cents United States money) for a donkey, and 150 cash (8 cents United States money) for a horse. Considering the wages paid, these rates are exorbitant. In many places relief is hopeless, since the ferries are in the nature of monopolies protected by the local officials. In contrast with the rule is the establishment occasionally of a free ferry by charitably disposed persons who wish to store up a little merit against the day of settling in the world to come.

At present the least possible amount of money is spent in the making or repairing of roads. Sometimes improvements are made by private enterprise, but nothing of a substantial character is done. Where dikes are built along the banks of rivers or canals they become public thoroughfares, and as they must be kept in a fairly safe condition they may be counted among the best roads in the country. Under such circumstances land travel is difficult, tedious, and disagreeable. In the transport of goods there is great economic waste. In bad weather there are long and vexatious delays. The roads in the north are cut up by cart wheels into deep ruts, which minister to the wrath and agony of the traveler and the destruction of any wares of a breakable character. Eight and ten horses may be seen at times tugging at a loaded cart which on a western highway would be drawn by a single team. In central or southern China, except in treaty ports, the only wheeled vehicle seen is the wheelbarrow, which is used both for passen-

gers and freight. In transporting freight, the barrow men travel in companies, and aid one another over difficult portions of the road. This is also a protection against robbers who infest certain districts. A single barrow man will sometimes wheel 400 catties (533½ pounds). The ordinary load is 200 to 300 catties. For land travel the principal means of conveyance are the sedan chair, the mule litter, the cart (used only in the north), horses, mules, and donkeys. The most comfortable is the chair, but the use of this is denied to ordinary people in Pekin and vicinity. The most expeditious is the horse. For transportation there are barrows, pack horses, mules, donkeys, and camels. Journeys are divided into stages of about 30 miles each, but the first stage on leaving a large city or the last on approaching it is always a short one, perhaps 15 or 20 miles. By forced marches a traveler can do much more than the ordinary stage, but he will find himself put to many inconveniences by being obliged to stop in small villages where no preparations are made for his entertainment.

Travel by boat is by far the most convenient and most comfortable method in this Empire. In the maritime provinces and the Yangtse Valley waterways are numerous. A number of steamship companies are running steamers regularly on the Yangtse as far as Ichang. Boats leave Shanghai and Hankau daily, except Sunday. There is steam communication between Shanghai and Soochow and between Shanghai and Hangchow, also through the canals connecting these cities. Elsewhere, as yet, steam is forbidden and one must depend upon the native house boats, which are of various sizes but can be made comfortable. One must be prepared to suffer long delays at times when the wind and tide are unfavorable. The cost of travel and transportation varies in different parts of the Empire.

In central China, chair bearers will receive 360 cash (20 cents) a day apiece; in the southern provinces, twice as much. A donkey, with a boy, will cost 250 cash (14 cents) per diem without food, or 200 cash (11 cents) for one who furnishes food for the beast and his driver. A horse or mule will cost 300 to 400 cash (17 to 22 cents); a wheelbarrow for passenger and his luggage, 400 cash (22 cents). The barrow will not make over 18 to 20 miles in a day. Mule litters cost from 50 to 75 cents per diem, and carts from 50 to 80 cents. In the central provinces, food and a place to sleep will cost 200 cash (11 cents) per diem. In the north, it may cost 50 cents to \$1 Mexican (25 to 50 cents).

Boat traveling is much cheaper. On the smaller boats, each person will pay 120 cash (7 cents) for one day's journey, which is about 100 li, or 33½ miles. On the larger boats, where there is no competition with steamers, as on the Grand Canal, 185 cash (10 cents) a stage is asked, and where there is competition with steamers, this is cut down to 133 cash (8 cents). In addition, one must pay wine money and incense money, the latter to propitiate the gods and secure good weather. Food on the boats is usually extra, and costs some 35 cash (2 cents) a meal

for rice. The passenger tariff on the river steamers depends upon the amount of competition. At present native fares on the Yangtse are very low, about 50 cents for every 100 miles. This includes two meals a day. Foreign rates are \$4.80 for 100 miles.

The cost of carrying goods varies with the means of transportation. A donkey will carry 100 to 150 catties (133½ to 200 pounds), and will cost 200 to 300 cash (11½ to 17 cents) for each day, with extras for food for the animal and his driver. One driver will take a number of animals. A horse or mule will carry 240 to 320 pounds, and will cost 350 to 500 cash (20 to 28 cents) a day. Camels will carry still more, but are used only in the north, where the cost is about 28 to 34 cents a day. A wheelbarrow will carry, as a rule, 180 to 300 catties (240 to 400 pounds), and will make about 16 miles a day at a cost of 17 to 28 cents. Where carts are used, freight is about 25 cents per picul. The average cost by land is estimated at 290 cash (16 cents) for every picul; that is, 133½ pounds carried 100 li (33½ miles).

Water freight is much cheaper. A boat capable of carrying 100 piculs may be hired at 1,000 cash (44 cents) a stage, or at 600 cash (34 cents) per diem. Larger boats, with a capacity of 300 piculs each, may be hired at 60 to 90 cents a day. The average cost by water will be about 7 cash for each picul for 100 li, wine and incense money extra. Freight rates on steamers are not so fixed, but vary from time to time. They are reasonably cheap. The principal trade routes are the following: From Tientsin by river to Tungchow, thence by land to Peking, or by land the whole way from Tientsin to Peking (a railway is in process of construction between the two cities); from Peking through the Nankeo Pass to Kalgan, and thence to Kiachta and Siberia. There is an old road from Peking northeast into Mongolia, one branch of which leads to Shanghai kwan and thence to Kincheo, Moukden, and Kirin. But there is now a railroad from Tientsin direct to Shanghai kwan, and as there is an open port at Newchwang, the trade of Moukden and Kirin, as well as of the Liaotung Peninsula, naturally passes in and out at this port.

From Peking, there is a road to Paotingfu and water communication from Tientsin to Paotingfu. From Paotingfu there is the great northern route to the west, which goes via Tai-yuenfu, the capital of Shansi, thence to Pucheo on the Yellow River, which is crossed by a ferry, and from this point to Singanfu, the capital of Shensi, and from thence to Lancheo, the capital of Kansuh, and beyond to Urumtsi or by another route to Yarkand and Kulga.

From Tai-yuenfu, a branch road goes westward via Fung cheo and Yung-ning cheo to Ninghwa in Kansuh. From Lancheo another road goes to Chengtu in Szechuen. It is forty-eight days' journey from Peking to Lancheo, and fifty-eight thence to Chengtu. There is also an important road from Paotingfu leading to the southwest via Shentehfu and thence to Kai-fung, the capital of Honan, whence various

roads diverge, the most important perhaps being via Cheo-ki-keo to Hankau, whither we may go by land or partly by land and water.

Another road leads west from Kai-fung to Tung-Kuau, where it joins the main line from Singan. Another route leads south via Fung-yangfu to P'u-keo in the Yangtze Kiang, opposite Nankin. From Tientsin there is also connection with Shantung and the south. The Grand Canal is practically worthless in its northern portion, and is abandoned by boats from Tsining to Lin Tsing Cheo except by some of the tribute rice boats, which at great expense are annually dragged through. The Yellow River, though crossing all the northern provinces, is not utilized except for local traffic, although it is said by competent engineers that it can be made navigable as far as Kai-fungfu.

From Chefoo, there are roads inland to Wei-hsien, Lai Cheo, Tsing Cheo, and the capital of Shantung province, Tsi-nanfu, where connection is made with other roads north and south.

The great artery of commerce is, of course, the Yangtze Kiang, which is navigable for some 2,000 miles. Steamers ply between Shanghai and Ichang, about 800 miles. Above this point navigation is made somewhat difficult by a series of rapids. American stern-wheel boats would be able to ascend them.¹

At present, communication is kept up by native boats, which are dragged through the rapids by towlines pulled by men.

From Chinkiang, 156 miles from Shanghai, communication is had north and south by the Grand Canal, which is available for large junks from Hangchow to Tsingkiangpu, whence connection is made by the Hwai River with northern Nganlwei and Cheokiakao, the great distributing center of Honan. This is the most natural route to these districts, but owing to the heavy likin charges the greater part of the traffic goes via Hankau, or across from Nankin overland. In fact, much traffic is diverted from all the main channels by likin charges, and a great deal of distribution is done by bypaths. An extension of the canal supplies good navigation to Tsi-ning in Shantung, and rice boats, as said before, are taken clear through to Peking. A perfect network of waterways, partly natural and partly artificial, in Kiangsu, is connected with the Grand Canal and the Yangtze, and furnishes cheap and comfortable communication with all parts of that province.

From Nankin, a caravan route, mentioned above, extends from Pukeo on the north side of the river to Fungyang Fu, 120 miles, with connection beyond to the north and northwest, connecting with the Hwai River route and farther on with the great northern road to the western provinces.

From Wuhu, there are waterways inland both north and south. From Kiukiang via the Poyang Lake, there is good water communication with Nanchangfu, the capital of Kiangsi, and thence overland by the Meiling Pass to Nanhiung Cheo in Kwantung, from which there is

¹See Navigation of the Upper Yangtze with Steam Vessels, p. 931.

water communication by the eastern branch of the North River. Before the development of steamship traffic by the opening of the treaty ports trade between the central provinces and Canton all went by this route. From Kiukiang northward there is a highway to Lucheo, where connection is had with Nganking on one side and northern Ngauhwui on the other.

Connection between the Yangtse Valley and the south is also had via the Siang River to Ningyuen Hsien, and thence overland by two routes, one into Kwangsi and the other to Lincheo in Kwangtung and by the North River to Canton.

Through the Tungting Lake, by the Chang River, communication is made with the provinces of Kweichou and Yunnan.

The most important center on the Yangtze doubtless is Hankau, whence there is an overland route northeast into Honan and thence to Peking, and a water route via the Han and Tang rivers to the same region.

A very important trade route is from Kankaw by the Han River to Lao-ho-keo and thence by boat to Kingtsih kwan, and from there by mule over the mountains to Sinnganfu, where connection is made with the roads mentioned above. The principal trade route into Szechuen is naturally by the Yangtze, but from Chingtu there are roads branching in various directions. One, called the Great South road, leads to Yachou, two days beyond which place, at Tsingli Hsien, it divides, one branch going west to Tatsienlu, Litang, and on via Batang to Lhasa, the capital of Tibet, 1,500 miles from Chingtu, the second branch connected with Yunnan by the valley of the Kienkiang.

The Great East road connects Chingtu with Chunking, 340 miles. The Great North road leads to Singan and thence to Peking. The West road furnishes communication with Sungpwan and Kokonor.

From Chunking, there is connection by water with Lucheo, whence there is an important overland route to the capital of Yunnan. At Lucheo it is joined by a road from Chungtu. A more popular route to the northeast from Yunnan Fu is by Kweiyang, the capital of Kweichow, through Chengyuan, on the river Chang, down through Hunan to the Yangtze, a route referred to above.

From Yunnanfu, the chief trade route is overland via Mengtze to Manhao and thence by boat to Laokai, and from that point down the Red River to Haiphong, in French Tonkin. It is twenty-one days by this route from Yunnanfu to Haiphong. This is the most natural route from the south into Szechuen.

The old tribute road from Burma to Peking passes through Yunnanfu, coming from Bhamo by way of Tengyueh and Talifu. It is about 350 miles from Yunnanfu to Tengyueh, and seven days from the latter place to Bhamo. This route has been proposed for trade with British Burma, but is regarded as an impossible one by some of those who have been over it, owing to the natural difficulties. It crosses nine

distinct mountain ranges by lofty passes accessible only by very steep paths. Engineers have nevertheless indicated a practicable route for a railway in this direction. A better route is said to exist by the Irrawaddy, from whose head waters there is easy connection with the highway from Lhasa to Chingtu.

From Mengtze, there is another route of importance which connects with Canton by way of the West River. It is 350 miles from Mengtze to Poknay, the head of navigation on the left branch of the West River, whence a boat journey of a month or more will bring one to Canton. From Poknay, there is connection also with Kweichow. By leaving the West River below Nanningfu at Nauhsiang, a land journey of three days and a water journey of seven more will bring one to Pakhoi. The West River seems the most easy and practicable route to this region, but here, as elsewhere, undue exactions in the way of likin dues have diverted the bulk of the trade into other and more difficult routes. From Wucheo, on the West River, there are land routes to Kweilin and Nanning, and from Nanning to Peiseh and Lungcheo, whence there is connection overland through Tonkin to Haiphong. The foreign goods for Lungcheo, Nanning, and Peiseh come mostly from Pakhoi instead of by the natural route via West River from Canton.

From Pakhoi to Nanning, by the usual trade route, is 262 miles, all but 53 miles of which may be made by water. From Nanning to Peiseh is 283 miles by water, and thence one can go directly to Yunnanfu, which is 600 miles by land. The French have secured a concession, for the construction of a railway from Lungcheo to Chengnankwan, where it will connect with the Tonkin system of railways. This will give the French port some advantage over Pakhoi.

T. R. JERNIGAN,
Consul-General.

SHANGHAI, *December 22, 1896.*

TRANSPORTATION ON THE YANGTZE.

In order to answer inquiries regarding transportation facilities to river ports on the Yangtze, I would state there are six regular lines of steamers plying between here and Shanghai the year round, each making a trip about every ten days. Four of these lines are English, one Japanese, and one Chinese. They all do a large business, both in freight and passengers, accommodations for foreigners and natives being separate. The majority of their captains are citizens of the United States, and have been running on the river from fifteen to thirty years. Besides the above lines of steamers, there are many lochers (300 to 500 ton vessels) and junks carrying mixed cargoes between the above ports. At Hankau, all goods intended for up-river ports are reshipped. Three of the above firms have small steamers which make

weekly trips to Ichang, 400 miles west. At Ichang goods and passengers are reshipped in junks and house boats.

L. S. WILCOX,
Consul.

HANKAU, *October 15 1898.*

NAVIGATION OF THE UPPER YANGTZE WITH STEAM VESSELS.

Mr. Archibald J. Little, a British merchant resident of this port (Chungking), has succeeded in bringing hither a good-sized steam launch from Shanghai. This is the first steam vessel to ascend the Yangtze above the treaty port of Ichang, and was about three weeks en route. According to Mr. Little's statement, the journey might have been accomplished in much less time had it not been for numerous delays. He had in tow a small junk and a native gunboat sent by the Chinese for protection. These, of course, retarded his progress, and the speed of his boat was not greater than 10 knots.

This only shows what can be done with a full power light-draft steamer. It is to be hoped that the navigation of the waters of the Upper Yangtze with steam vessels will be undertaken at no distant date, now that a small beginning has been made.

Vessels to navigate this section of the river must not be over 150 feet long; they must have light draft (say 4 feet) and power sufficient to propel them at the rate of 15 knots an hour. This would give them headway at the swiftest rapids and currents. Steamers of the above dimensions would probably not have much room for cargo, inasmuch as the engines would take up a great deal of space, as well as the accommodation for passengers. The cargo, it is thought, could be taken in tow on board native boats. This method would have the advantage that on reaching a bad rapid, the boat or boats in tow could be liberated and the steamer make the ascent alone; the junks could then be hauled up, as they now are, by coolies, which would still furnish employment to this class of people.

It is thought possible for steamers to run ten months of the year. During the remaining period, the lowness of the water would make navigation difficult, if not impossible.

GEO. F. SMITHERS,
Consul.

CHUNGKING, *March 31, 1898.*

OPENING OF INLAND WATERS AND TREATY PORTS.

Under date of June 21, 1898, Minister Denby sent from Pekin translation of a note from the Tsung-li yamén, of June 3, which states that the inland waters of China are opened for steamers registered for that trade, the steamers to confine their trade to the inland waters and not to proceed to places outside of Chinese territory.

The treaty ports of China, including those opened to trade in 1898, are given by Mr. Denby in a dispatch dated April 20, 1898, as follows:

Port.	Year in which opened.	Population.
Treaty of Nankin with Great Britain, Aug. 29, 1842:		
Canton.....	1859	2,500,000
Ancy.....	1862	98,000
Fuchau.....	1861	650,000
Ningpo.....	1860	255,000
Shanghai.....	1854	475,000
Treaty of Tientsin with Great Britain, July 26, 1858:		
Niuchwang.....	1861	60,000
Chefoo.....	1861	25,000
Swatow.....	1860	35,000
Klungchau.....	1876	40,000
Not especially named in the treaty, but afterwards designated:		
Hankau.....	1862	800,000
Chinkiang.....	1861	140,000
Kiukiang.....	1862	55,000
Pekin convention with Great Britain, Oct. 24, 1860:		
Tientsin.....	1861	950,000
Treaty between France and China, Oct. 25, 1860:		
Nankin.....	(?)	Unknown.
Treaty with Russia, Nov. 2, 1860:		
Kashgar.....	(?)	Unknown.
Chefoo convention with Great Britain, Sept. 13, 1876:¹		
Ichang.....	1877	34,000
Wuhu.....	1877	79,700
Wenchow.....	1877	80,000
Pakhoi.....	1877	20,000
Treaty with France, June 26, 1887:		
Lungchow.....	1888	22,000
Mengtsz.....	1888	12,000
Manho.....	(?)	Unknown.
Additional articles to the Chefoo convention with Great Britain, Mar. 31, 1890:		
Chungking.....	1890	300,000
Regulations appended to Sikkim-Thibet convention of 1890 with Great Britain, Dec. 5, 1893:		
Yatung.....	1894	Unknown.
Convention with Great Britain, Mar. 1, 1894:		
Manwyne.....	(?)	Unknown.
Treaty with Japan, Shimonoseki, Apr. 17, 1895:		
Shashih.....	1896	73,000
Chungking (see under No. 23).....		
Suchow.....	1896	500,000
Hangchow.....	1896	700,000
Gerard supplementary convention with France, June 20, 1895:		
Szema.....	1896	15,000
Under special article of treaty with Great Britain, Feb. 4, 1897 (both on West River):²		
Sanshui.....	1897	4,000
Wuchow.....	1897	50,000
Opened by an imperial decree of Mar. 31, 1898:		
Yochow.....	(?)	Unknown.
Santuo.....	(?)	Unknown.
Chinwangtao.....	(?)	Unknown.
Opened by imperial decree, Apr. 7, 1898:		
Woosung.....	(?)	Unknown.

¹ Under this same convention goods are allowed to land at the following places (ports of call) on the Yangtze River: Tatung, Nganching, Hukou, Wusueh, Luchikou, Shashih (made a treaty port by the treaty with Japan, April 17, 1895).

² Not opened.

³ Under the same article the following ports on the West River were also made ports of call: Kungmoon, Kumchuck, Shuhing, Tahking.

TRANSPORTATION CHARGES IN CHINA.

Consul Smithers, of Chungking, writes, under date of October 29, 1898:

Foreign goods, on arrival from abroad at any seaport in China, pay duty in accordance with the treaty tariff, and are then forwarded to any treaty port without payment of further duties. Goods arriving in Shanghai are shipped on board steamers to Hankau and thence to Ichang, the present terminus of steam traffic of the Yangtze.

From Ichang they are sent on native boats to Chungking. If goods are sent to the interior from here, half the import duty is levied and collected by the foreign customs, and the goods go to their destination under transit passes issued by the customs.

As to the expense of sending goods from the United States to China, this is no easy matter to estimate. To begin with, there is as yet no direct trade with foreign countries. The trade is with Shanghai or Hankau, and the expense of sending goods to Shanghai, I presume, can be learned in New York or San Francisco, as there are many lines of steamers from both cities to Shanghai. From Shanghai to Chungking the following tariff of the Chungking Transport Company, issued in 1896, will give an idea of the expenses at different seasons of the year:

Description.	May 1 to Oct. 31.		Nov. 1 to Apr. 30.	
	Taels.	\$	Taels.	\$
Merchandise.....per ton..	25	\$16.13	22	\$14.19
Packages and all shipments less than 1 ton.....per foot..	1	0.645	0.75	0.483
Do.....per pound..	0.02	0.0129	0.015	0.0096

¹Taking the value of the Shanghai tael, as estimated by the United States Director of the Mint, October 1, 1896, at 64.5 cents. The haikwan tael equals 71.8 cents.

The ton is 40 cubic feet or 2,000 pounds. Freight is payable on measurement or weight, at the option of the company.

The three or four steamship lines plying on the lower river have a combination with respect to freight and passenger charges, which stops competition. The tendency therefore is to keep up the freight rates, which are very high, considering the distance the goods are carried.

COMMUNICATION WITH CHEFOO.

Consul Fowler writes from Chefoo, October 24, 1898:

Last winter, a steamer left here on the arrival of the foreign mails from Shanghai for Shanhaikuan, where they were put on board the cars and forwarded to Tientsin and Peking. This was a vast improvement over the overland courier route, and offered an opportunity for a comparatively quick and comfortable trip to those whose business called them to Peking. No freight was carried by this steamer, which was chartered by the inspector of customs. No doubt this method will be followed in the future, as it is impossible to think of relapsing into the old method.

Many of the steamers now stop en route, British at Weihaiwei, German at Tsingtau, and a steamer now plies twice a week to Port Arthur. Besides these, a new line is to start in the spring from Vladivostok, calling at Port Arthur, Tientsin, Chefoo, Shanghai, and Hongkong. This line is under the control of an American firm at the first-named port. The port as a shipping center is rapidly growing in importance.

All communications with the United States are via Shanghai or Japan. Few ships trade direct. Only two (one American, one British) sailers entered this port for the twelve months ended June 30, direct from New York, both oil laden.

COMMUNICATION WITH TIENSIN.

Under date of Tientsin, October 14, 1897, Consul Read writes:

Direct shipments from the United States to Tientsin are impracticable, it being in all cases more advantageous to ship to Shanghai or to Hongkong, and then transship to the steamers of light draft that ply between these ports and Tientsin.

There are three large steamship lines that practically control this coast trade, i. e., the China Navigation Company, the Indo-China Steam Navigation Company, and

the China Merchants' Steam Navigation Company. Besides, there is a monthly service between Kobe, Korean ports, Chefoo, and Tientsin, undertaken by the Nippon Yusen Kaisha.

The Peiho is only navigable for junks of light draft to Tungchow, which place is 15 miles from Pekin, and connected with that city by a canal of five locks. These locks do not admit of the passage of vessels, each short division of the canal having its own cargo boats, which necessitates transshipment of cargo at each lock. All tribute rice, amounting to 1,000,000 piculs¹ annually, passes to Pekin via the Peiho and this canal.

Tientsin, by its geographical position, is the point of accumulation and distribution of all the merchandise destined for the United States or intended for consumption in the northern provinces of China. The native population is estimated at 900,000.

STEAMSHIP LINES FROM PACIFIC PORTS TO CHINA.

Consul Gracey writes from Fuchau, October 9, 1897:

The steamship lines plying between China and Pacific coast ports of the United States are: The Pacific Mail, and Occidental and Oriental to San Francisco, and the Northern Pacific to Tacoma; another line goes to Seattle, and one is projected to Portland, Oreg. Much freight and passenger traffic is carried on with the United States by the Canadian Pacific line running to Vancouver, which receives, especially in the early tea season, when the first-crop teas are rushed through to New York for the opening market, very large freight rates, as high as 3 cents per pound gross. This has gradually been lowered during the season, as the demand for quick delivery has fallen off until the present freight rate is 1 cent per pound gross. Many English freight steamers call at this port, carrying teas to New York via Suez. The passage requires a longer time, consequently freight rates are lower than overland from the Pacific coast, varying from 15s. to 22s. 6 d. (\$3.64 to \$5.46) per ton. This was higher at the commencement of the tea season. Sailing ships also leave occasionally at a much lower freight rate.

The actual time required in going from this port to Pacific coast ports, via Shanghai is from twenty-one to twenty-six days, the quickest time being made by the Canadian Pacific steamers to Vancouver.

FREIGHT FACILITIES FROM ATLANTIC PORTS TO CHINA.

Consul-General Goodnow, of Shanghai, on July 22, 1896, transmits a letter from a Shanghai firm, stating that ample facilities exist for the shipment of cargo from New York to China and Japan via Suez, and quoting rates of freight as varying from 22s. 6d. to 27s. 6d. (\$5.46 to \$6.68) per ton of 40 cubic feet, against 45s. to 50s. (\$10.93 to \$12.15), charged by steamship owners from London and Liverpool to same destination. Tea can be shipped via San Francisco and reach New York in about thirty-five days for the equivalent of 40s. (\$9.72) per ton of 40 cubic feet. The rate charged by Suez steamers, occupying sixty to seventy days on the voyage, is 27s. 6d. (\$6.68).

TELEGRAPHS IN CHINA.

Under date of October 24, 1898, Consul Fowler, of Chefoo, says:

The telegraphic system of China has of late deteriorated. Many times during the past year the wires have been out order, and weeks have elapsed before they were

¹ 1 picul = 133½ pounds.

repaired. After every thunderstorm the excuse would be "wires down." At no time in the history of China has there been such a demand on the system, owing to the political excitement and increased commercial activity. At last, affairs became so unbearable that the foreign community and commercial bodies at Tientsin and Shanghai pressed upon the administration the absolute necessity for an improvement, and a double line is now in course of erection across the province, and it is to be hoped that an improvement in the service will be the result. The cost of telegrams is very dear, including, as it does, the address and signature, and the minimum charge being for seven words.

Vice Consul Alf, of Canton, under date of October 15, 1897, sends the following:

Telegraphic communication within this district is fairly good, extending as far as Lung-chow, on the extreme western border, between Kwang-Si and Tonkin. In all, there are about 48 stations distributed within the two Kwang provinces, of which Kwang-Tung has 32 and Kwang-Si 16. Messages may be sent from here to Washington, D. C., either by the Great Northern Telegraph Company or via Vladivostock across Siberia. Of course, it would be preferable to send our messages across the Pacific Ocean via San Francisco or some other port on the Pacific coast. We hope that such easy connection between the United States and the Chinese Empire will be realized at no distant future.

DUTCH INDIA.

Shipping facilities are good, the best and cheapest being via Liverpool or London, thence direct to Batavia.

I do not recommend shipping via Holland or Singapore, as it is apt to be considerably more expensive on account of the cost of transshipment at those places.

From San Francisco, shipments are made to Hongkong, thence to Batavia or Serabaya.

The time of transit for goods between New York and Batavia, allowing liberally for transshipment, is about two months.

The best freight line from Liverpool is the Ocean Steamship Company (Blue Funnel Line); from London, the Queensland Royal Mail.

SIDNEY B. EVERETT,

BATAVIA, *October 27, 1898.*

Consul.

FRENCH INDO-CHINA.

The *Revue du Commerce Extérieur*, Paris, May 6, 1899, says in regard to the projected railways in Tonkin:

The governor-general of Indo-China has proposed to the minister of the colonies to commence work on the railways whose construction was authorized by the law of December 25, 1898. The line from Hanoi to Vinh will be 198 miles long; that from Haiphong to Vietri 96 miles. It is estimated that the total cost of the two lines will be \$8,994,070, an average of \$19,016 per kilometer, some \$300 less than the estimate made to determine the loan.

Viétri is situated just at the confluence of the Red River and the River Claire, and nearly 7½ miles northeast of the junction of the Red and Black rivers. The second line from Hanof Ninh-Binh will cross the delta of the Red River. But from Ninh-Binh to Giem-Quinh it will cross two massive mountains, separated by the delta of the Song-Ma. The first sum of \$28,950,000 has been raised. The credit necessary to assure the annual payment is inscribed on the general budget of Indo-China. For 1899, it amounts to \$308,800.

JAPAN.

RAILWAYS.

Consul-General Gowey sends from Yokohama, under date of August 24, 1898, the following statement, showing authorized and completed mileage of railways of Japan on July 31:¹

Name of company.	Author- ized (total) length.	Length com- pleted.	Name of company.	Author- ized (total) length.	Length com- pleted.
	<i>Miles.</i>	<i>Miles.</i>		<i>Miles.</i>	<i>Miles.</i>
Japan	853.14	821.15	Nankai	42.41	20.6
Hankai	6.22	6.22	Nanboku	12.38	12.33
Iyo	12.79	12.79	Hankaku	68.58	14.22
Sanyo	321.47	280.05	Kiwa	32.34	10.79
Sanuki	27.19	27.19	Koya	23.7	10.38
Kanshi	150.63	140.57	Chugoku	98.13	
Osaka	45.25	45.25	Nanso	81.6	31.6
Kobu	26.77	26.77	Seiwa	64.75	
Kyushiu	323.73	282.51	Iga	25.4	
Sobu	72	72	Zuao	10.41	7.3
Sangu	26.15	26.15	Imari	8.27	
Hochiu	59.51	48.24	Omi	27.45	7.42
Kawagoye	18.4	18.4	Yanaga	12.4	
Ome	13	13	Kibi	13	
Sano	9.54	9.54	Bisei	15	3.13
Nara	38.17	37.1	Tangaru	20	
Hantan	71.14	30.62	Kinbe	260.74	
Naniwa	16.6	16.6	Uwajima	15.4	
Boso	53.03	28.74	Ganyetou	108.52	
Ota	12.12	9.74	Tohi	140	
Nanyo	6.65	6.65	Tokushima	21.56	
Doso	3.06	3.06	Joso	52.12	
Kyoto	104.06	6.27	Shunko	46.43	
Chuyetsu	22.6	18.4	Tobu	48.51	
Narita	31.79	24.57	Ishinomaki	39.52	
Hokuyetsu	99.06	68.47	Mobu	32.37	
Kozuke	21	21	Joya	31.26	
Toyokawa	18.55	13.36	Tango	84.45	
Kayo	11.23	6.06	Tauga	12.52	
Karatsu Kogyo	27.3				
Nishinari	3.52	3.52			
			Total	3,521.2	2,231.16

¹ A report from Mr. Gowey, dated October 9, 1899 (received after the above report was in type), gives the mileage open for traffic in March, 1899, as 3,420 miles; including projected lines, 5,810 miles.

RAILWAY CONSTRUCTION IN JAPAN IN 1897.

Consul-General Gowey transmits, under date of January 15, 1898, a report, taken from the columns of the Japan Times, of Tokyo, showing the progress of railway enterprises in Japan during the previous year, 1897. The article reads:

Last year (1897) the progress of railway enterprise in Japan was phenomenal. Since the pioneer railway was constructed between Tokyo and Yokohama, a distance of 18 miles, in 1872, the system has been extended at an average rate of 100 miles a year, so that at the end of March, 1897, which concluded the twenty-ninth fiscal year, the total mileage had reached 2,446 miles. At one leap, however, during the year just expired, no less than 530 miles, approximately, were added to the total, thus bringing it up to 3,000 miles in round numbers. Of the lines newly opened for traffic during last year, the Tokuyama section of the Sanyo Railway, the Iwaki section of the Nippon Railway, and the Choshi section of the Sobu Railway were the most important, for their mileage alone aggregated 120 miles and some fractions. Of the works of construction actively pushed on since last year we may mention, among the Government lines, the Central line, the construction of which was begun from the three different termini at Nagoya, Hachioji, and Shinonoi; the Komatsu-Tsuhata section via Kanazawa of the Hokuriku Railway, and the Fukushima-Yamagata section of the Tohoku Railway, which is to effect a junction ultimately with the Aomori terminus of the Nippon Railway's line. With regard to private railway enterprise, we may mention the coast section from Taira to Nakamura of the Jyōban branch of the Nippon Railway; the Koriyama-Wakamatsu section of the Ganyetsu branch of the same railway; the Sanjyo-Nagaoka section of the Hokuyetsu Railway; the Kamo-Nara and Shijyo Nawate-Kitsu sections of the Kansai Railway; and the prolongation of the Tokuyama terminus of the Sanyo Railway, as far as Mitajiri. When this prolongation shall have been completed, the next work to be undertaken will be the further prolongation of the trunk line as far as Shimonoseki, which, according to the programme, will be the terminus at one end as Kobé is at the other. On the completion of the above-mentioned two sections of the Kansai Railway, Osaka and Nagoya will be connected with another railway service, besides the facility now afforded by the Government Tokaido line. Railway enterprise is also active in Kyushu. The Hayagi-Omura section and the Sasebo branch of the Kyushu Railway have been virtually completed and will be opened for traffic at no distant date. The other sections will be completed by June next. The industry at Hokkaido also claims our attention. The work there is in greater part official. The Government railway construction in Hokkaido is divided into two periods. To the first period of construction belongs the line which is to start from the Sorachifuto terminus of the Tanko Railway and to reach Asahigawa via Kamikawa. From Asahigawa, one route will go southward to the coast of Kushiro, and thence along the coast to Nemuro. The other route will divert northward from Asahigawa, and will reach Soya by way of Teshiwo. The total length is about 600 miles. The Sorachifuto-Asahigawa section, we understand, will be opened for traffic by May next, most probably. On the part of private railway enterprises in Hokkaido, that of the Kan-Sou Railway Company is the most important. The project is to connect Hakodate and Otaru, a distance of 150 miles, at the estimated cost of 8,000,000 yen (\$3,984,000). The work of construction will be completed in about five years. At present the journey between Otaru and Hakodate, if made by steamer, occupies twenty hours, while, if undertaken by the railway service now available from Mororan, no less than thirty-six hours are necessary. On the completion of the Kan-Sou Railway, it will be possible to cover the distance in eight hours.

Below is a table showing the lines opened for traffic during the year just expired:

Name of railway.	Section.	Mileage.
Gov. Hokuyetsu	Fukui-Komatsu	33
Nippon	Mito-Paira	58.04
	Taira-Hisanohama	32.34
	Iwanuma-Nakamura	8
Hokuyetsu	Naoyetsu-Hachijaki	14.9
	Hachijaki Kashiwazaki	9
	Nottari Sanjyo	24.7
	Kashiwazaki-Hojyo	5.25
Ota	Mito-Kujigawa	9.77
Kozuke	Takasaki-Shimorida	20.5
Narita	Sakura-Narita	7.78
	Narita Namerigawa	
Toyokawa	Toyokawa-Ichinomiya	2.3
	Toyokawa-Toyohaahf.	5
Chuyetsu	Kuroda-Fukuno	10.56
	Fukuno-Shirohata	6.35
Nanao	Nanao-Taushata	34.7
Sobu	Sakura Narihigashi	13.27
	Narihigashi-Choshi	37.13
Btoe	Otauna-Ichinomiya	12.37
Kansai	Tsuge-Uyeno	9.8
	Uyeno-Kamo	16.26
Sangu	Miyagawa-Yamada	2.37
Hankaku	Ikeda-Takarazuka	6.3
	Kanzaki-Ikeda (reconstruction)	
Sanyo	Ujina-Hiroshima	3.46
	Hiroshima-Tokuyama	67
Nankai	Sakai-Sano	15.9
	Sano-Ozaki	5.51
Kyoto	Kyoto-Saga	6.27
Sanuki	Marugame-Takamatsu	17.19
Kyushu	Takao-Hayagi	16.27
	Hayagi-Sasebo	5.46
	Nagayo-Nagasaki	5.2
Hoshu	Namehashi-Nagasu	27.63
Tanko	Muroran	3.1

Those that received permanent charters last year were as follows:

Name of railway.	Section.	Mileage.
Sanyetsu	Koriyama-Sakaya	106.52
Tokushima	Tokushima-Kawada	21.6
Tohi	Kumamoto-Otsu	14.46
Shikoku	Asami-Tadotsu	96.64
Nampo	Oita-Fuye and Oita-Nagasu	70.59
Funakoshi	Funakoshi-Dazaifu	83.6
Chikugo	Kuroki-Okawa	20.2
Tosa	Enokuchi-Yamada and Noji-Suzaki	32.38
Joze	Totte-Utsunomiya	52.12
Shunko	Iwabuchi-Kofu	46.73
Hantan (extension)	Wadayama-Tsuyama	26.14
Kyushu (extension)	Kanada-Ida	2.6
	Shimoyamada-Kamiyamada	1.18
Tofu	Kitasenju-Ashikaga	50
Jobu	Omiya-Kumagai	
Mbu	Itabashi-Ashikaga	
Ishinomaki	Ishinomaki-Kajiyasawa	

Those that received temporary charters last year were:

Name of railway.	Section.	Mileage.
Seto	Nagoya-Seto	13
Kurata	Miyata-Ougagawa	11
Hokuchiku	Dazaifu-Yoshi	25.12
Tsurugaoka	Sakata Kamo	22.3
Scinan	Kokubu-Nobeoka	100
Mino	Seki-Kozuchi	85
Kawachi	Sumimichi-Kashiwabara	8.4
Fuji	Suzukawa-Oniya	8
Chuyetsu (extension)	Takaoka-Fushiki	6
Kansai (extension)	Kamo-Kizu	3.65
Harima	Akashi-Tanigawa	37
Iwaki	Koriyama-Taira	44
Kainan	Iwazu-Takamata	26.7
Tosan Electric	Karabitsu-Mita	8
Etsu-u	Nattari-Tsurugaoka	96
Chihzei	Wakatsu-Nakatsu	69
Sokai	Yokohama-Zushi	32.4
Seisatsu	Kagoshima-Mukoda	32
Hamamatsu	Hamamatsu-Futatabi	12
Funakawa	Funakawa-Toki	17.6
Toyama	Toyama-Higashi-Iwase	5
Narita (extension)	Saraha-Kamigawa	7.4
Iga (extension)	Ujikawa-Yamada-Toba	10
Kyushu	Moji-Tanoura	2.4
Hoshu	Tanoura-Sono	11.37
Narita	Kawagoyo-Narita	67
Obama	Obama-Otsu	95.2
Yoshino	Katsura-Kitamuta	5.7
Toyokawa (extension)	Toyokawa-Goyu	4.7
Keihoku	Kyoto Otsu	6.4
Azuma	Komigawa-Matsukishi	18
Koshima	Kurashiki-Takahashi	21

TELEGRAPHS.

Under date of December 30, 1898, Mr. Gowey says:

The condition of the telegraph service in 1897 is summarized as follows:

Routes	14, 327
Lines	46, 746
Offices	1, 259
Messages forwarded	14, 136, 612
Messages delivered	14, 379, 606

TRANSPORTATION FACILITIES OF NAGASAKI.

Consul Harris, under date of Nagasaki, October 31, 1898, says:

Internal transportation is by railway, cargo boats, porters, and pack animals; coastwise by junks and steamers; foreign, by numerous lines of ocean steamers. Existing facilities are ample. The new arrangement of mail steamers from Hong-kong to San Francisco, stopping from twelve to twenty-four hours at Nagasaki, goes into full effect the middle of December. It is a joint schedule of the Pacific Mail (American), Occidental and Oriental (British), and Oriental (Japanese) steamship companies. The Japanese vessels are new, built in Great Britain expressly for this line. The time from here to San Francisco via Kobe, Yokohama, and Honolulu is twenty-two to twenty-three days. By connection with steamers to Kobe there are lines to Tacoma (Northern Pacific) in twenty-two days and to Seattle (Japan Mail Steamship Company) in the same time.

By the 1st of November it is expected that the Kyushu Railway will be completed to Moji, on the Strait of Shimonoseki, at the western entrance to the inland Sea of Japan, enabling passengers and freight to go through from Nagasaki without change. Connection is made with a branch line to Kumamoto, and this branch will eventually be carried through to Kagoshima, the capital of the province of Satsuma, in

the southern part of the island of Kyushu. This development will materially benefit the trade of Nagasaki, but for traveling will probably not be patronized largely by foreigners. At the Strait of Shimonoseki it is proposed to equip a ferry for transporting an entire train. The width of the strait is half a mile, and at Bakan, on the north side, connection will be made with the Sanyo Railway, by which passengers may go through to Kobe, Yokohama, and Tokyo, and at different points connect with the extensive system of the main island. It is the present intention to build a bridge across the Strait of Shimonoseki, which will be one of the wonders of the railway world.

OCEAN TRANSPORTATION.

Under date of October 15, 1897, Consul Abercrombie, of Nagasaki, gives the following list of transportation companies:

Pacific Mail Steamship Company and the Occidental and Oriental Steamship Company. Running between San Francisco and Hongkong. Steamers leaving for San Francisco and Hongkong every eight days. The passage from this port to the United States is made usually in from eighteen to twenty days.

Peninsular and Orient Steam Navigation Company. Running between Hongkong, China, Japan, Australia, India, and Europe. Steamers leaving for these places in connection with other lines every fortnight.

Canadian Pacific Railway Steamship Company. Running between Vancouver, British Columbia, and Hongkong. Steamers leaving for Vancouver and Hongkong every three weeks.

Russian Volunteer Fleet. Running between Odessa and Vladivostok, Siberia, every thirty days.

Russian Steam Navigation in the East. Running between Chefoo, Nagasaki, Korea, and Shanghai every twenty days.

"Glen" Line of steam packets. Running between Japan, China, and Europe every thirty days.

"Ben" Line of steamers. Running between China, Japan, and England every thirty days.

The Ocean Steamship Company. Running between China and Japan ports and England every thirty days.

Norddeutscher Lloyd. Running between Hongkong, Japan, India, Italy, and Germany every thirty days.

China Mutual Steam Navigation Company, Limited. Running between Japan and China ports and England every thirty days.

Nippon Yusen Kaisha. Regular steam communication between Yokohama and Shanghai every fortnight; Kobe and Seattle, calling at Honolulu, monthly; Yokohama and Bombay, calling at Hongkong and India, monthly; Yokohama and Melbourne, calling at Kobe, Nagasaki, Hongkong, Thursday Island, Townsville, Brisbane, and Sydney, monthly; Hongkong-Vladivostok Line, calling at Shanghai, Chefoo, Chemulpo, and Nagasaki, every three weeks; Shanghai-Vladivostok Line, calling at Chefoo, Nagasaki, Fusan, and Gensan, every three weeks; Kobe and Tientsin, calling at Nagasaki, Fusan, and Chefoo (discontinued during winter months); Kobe and Niuchwang, calling at Nagasaki, Chemulpo, Chefoo, and Taku (discontinued during winter months); and Kobe and Vladivostok, calling at Nagasaki and Gensan (discontinued during winter months).

"Strath" Line of steamers, Scottish Oriental Steamship Company, Navigazione Generale Italian, Indo-China Steam Navigation Company, Limited, Austrian Lloyd Steam Navigation Company, Holtz Line of steamers, "Mogul" Steamship Company, and "Warrak" Line of steamers. (Irregular.)

The large majority of these steamers call at Nagasaki for coaling purposes only. The coal obtained here is taken from the mines situated in the island of Takashima, near the entrance of the harbor. Lately the demand has far exceeded the supply, and large quantities are brought to Nagasaki in junks from Moji, at Shimonoseki Straits, about 148 miles north of this post and 50 miles south from Miike.

COMMUNICATION WITH HIOGO.

Consul Lyon writes from Hiogo, October 31, 1898:

The following table gives the number and tonnage of vessels plying between this port and the United States in the first six months of 1898:

Company.	1897.										
	San Francisco.		New York.		Seattle.		Tacoma.		Portland.		
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	
Northern Pacific Steamship Co.			6	10,800				16	29,068	6	14,672
Pacific Mail and Occidental and Oriental Steamship Co.	21	66,189			6	11,019					
Nippon Yusen Kaisha			1	1,648							
Shewan Tomes & Co.			1	3,000							
Total	21	66,189	8	15,448	6	11,019	16	29,068	6	14,672	

Company.	1898.										
	San Francisco.		New York.		Seattle.		Tacoma.		Portland.		
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	
Northern Pacific Steamship Co.			6	10,245				9	17,088	6	14,672
Pacific Mail and Occidental and Oriental Steamship Co.	19	51,623									
Nippon Yusen Kaisha			2	2,662	8	20,621					
Shewan Tomes & Co.											
Total	19	51,623	8	12,907	8	20,621	9	17,088	6	14,672	

NEW TRANSPORTATION FACILITIES.

Consul Lyon, under date of Hiogo, November 17, 1898, writes:

A new trans-Pacific line of steamers, to be operated by the recently formed "California and Oriental Steamship Company," will be put into operation in December next.

These steamers will run in connection with the Atchison, Topeka, and Santa Fe Railroad system in the United States.

The terminal points will be Hongkong, China, and San Diego, Cal. The new line of steamers will ply at regular intervals, and call at intermediate ports, including Yokohama, Hiogo, and Honolulu.

Three steamers have been chartered for this line for three years. They are the *Belgian King*, 3,379 tons; the *Carlisle City*, 3,002 tons, and the *Carmarthenshire*, 2,929 tons.

The commerce of the United States with the far East is expanding rapidly, as shown by the continually increasing facilities for transportation from the Pacific coast.

NEW YORK-JAPAN STEAMSHIP LINE.

Consul Skinner, of Marseilles, says, under date of April 2, 1898:

The *Indrapura* is about to leave this port for New York, to take her place in a fleet of new boats just being built for the purpose of plying between the ports of Japan and New York. Until now, the traffic between the United States (east coast) and Japan has been in the control of unattached vessels sailing at irregular intervals, and I am informed that the pioneer effort to maintain a regular service is about to be undertaken by the organizers of the Indra Line, the title word signifying "Kings of India."

The fleet will fly the British flag and will include the following ships, each with an average carrying capacity of 3,150 tons: *Indravelli*, *Indralema*, *Indrani*, *Indra*, and *Indrapura*. The increasing commerce between New York and Japan is responsible for the organization of the Indra Line, the New York agents of which are Funckeyde & Co. Monthly sailings will be undertaken, and the boats will touch at Marseilles when not completely loaded for either New York or Japan. The *Indrapura* will make the line's maiden trip, and will be freighted with Baldwin locomotives and miscellaneous manufactures.

KOREA.

Korea is connected with the outside world by steamship lines from Japan, China, and Siberia. Two lines of good vessels make frequent trips to and from Japan, usually starting from Kobé, Japan. The regular vessels of the Nippon Yusen Kaisha Steamship Company stop at Nagasaki on their way to Korea; those of the Osaka Shoshen Kaisha Company do not, as a rule, call at Nagasaki. A Russian line gives direct communication with Vladivostock, Siberia, by way of Nagasaki.

Freight rates at present are as follows:

From London to Kobé, 40s. (\$9.73) per ton measurement, 35s. (\$8.51) per ton weight. For dead weight, such as pig iron, rails, etc., this is sometimes reduced to 27s. 6d. (\$6.68).

From New York to Kobé via Suez the rate is 10s. to 12s. 6d. (\$2.43 to \$3.03) higher than the above.

From Chicago to Kobé via the Pacific the rate is \$12 per 40 cubic feet, but not under 1½ cents per pound, for general merchandise. Special rates are made for certain lines of goods.

From San Francisco to Yokohama the rate is \$10 to \$12 per ton, weight or measurement. It is about the same to Kobé. Lower rates are made for special articles and also at seasons when competition is keen. Flour is carried now at \$8 per ton of 2,000 pounds.

To the above must be added 8 yen (say, \$4 gold) to or from Kobé, Japan, to Chemulpo, Korea.

The time from Kobé to Chemulpo by direct steamer is between three and four days; by regular steamers that call at Nagasaki and other ports the time is not less than six days.

The freight service leaves much to be desired. The Japanese steamship companies have dispensed with foreign assistants and have taken on poor, untrained native employees to such an extent that hardly a single shipment comes through entire; and the American railroad and mining companies operating here have been caused serious and expensive delays by having important parts of most of their shipments left out in Japan or overcarried.

I have myself often experienced this same inconvenience. Recently, the largest portion of a considerable shipment from Chicago by the Nippon Yusen Kaisha Company was carried to Siam and back, causing a delay of two months in the receipt of goods that were most urgently needed.

The same may be said, to a certain extent, of the mail service. American mail for Korea is made up at Kobé and forwarded to Korea as domestic mail. It seems often to miss favorable opportunities for shipment, and in a recent aggravated case a large and important mail was carried to China and back, causing a most vexatious delay. In this case the Japanese Government was seriously inconvenienced by the nonreceipt at its legation in Seoul of important dispatches. The resulting investigation will doubtless have a good effect.

Passage from Yokohama to Chemulpo by the comfortable steamers of the Nippon Yusen Kaisha Company costs 50 yen (\$25 gold) first-class and is a popular route taken by travelers on their way to northern China.

There is now at Chemulpo a large sailing vessel direct from Washington with 1,250,000 feet of American timber for the use of the Seoul-Chemulpo Railroad, which is being built by Americans. This is the second vessel to come from America direct to Korea since the country was opened in 1882. It was with some difficulty that such a vessel was obtained for this voyage, as, the Korean coast not being lighted, the venture was considered too hazardous. The captain of the *Honolulu* brought his ship to the anchorage at Chemulpo without a pilot or other assistance, and says that schooners will prove to be much better for navigating Korean waters than vessels of other rig. The voyage consumed eighty-five days, owing to head winds and calms on the Pacific. This information may be of interest to those who contemplate a shipping trade with Korea.

HORACE N. ALLEN,
Consul-General.

SEOUL, *January 28, 1898.*

RAILROADS.

Under date of Seoul, September 20, 1898, Consul-General Allen says:

Three years ago a concession was granted to a Japanese company for the building of a railroad to traverse the island. Since then, five extensions of time have been given, but owing to the company's inability to raise the necessary funds, the project has been abandoned. At the next sitting of the Japanese Parliament a bill will be introduced to provide for the building of a railroad to be paid for by the State. It is estimated that the cost will be about \$15,000,000.

In a report dated March 31, 1899, Mr. Allen says that the concession for the Seoul-Chemulpo road was sold in December, 1898, to a Japanese syndicate. It will be completed, it is thought, in 1899.

PERSIA

I inclose a report on the trade routes of Persia, taken from the British Board of Trade Journal.

The trade routes which connect Persia with the outer world may be roughly classified into northern, northwestern, and northeastern routes, which are more or less monopolized by Russia, and the southern and southwestern, used by England and British India. The purely

Russian lines are those from Tiflis, in the Caucasus, and from Astara, a small port on the southern shore of the Caspian, to Tabriz, and thence via Kasvin to the capital; the caravan routes from Enzeli, Resht, and Meshed-i-sar, on the Caspian, direct to Teheran; the route from Gez, on the southeastern shore of the Caspian, via Asterabad, and the still more important one from Askabad, on the trans-Caspian line, of which the two last named lead direct to Meshed, the capital of the rich Persian province of Khorassan.

But, although Russia may predominate in the north, the bulk of the foreign trade of Persia is carried on in the south via the ports of the Persian Gulf, and here the British trader is in the ascendant. These ports are Bunder-Abbas, at the entrance to the gulf, whence caravans ply via Kerman and Yezd to Ispahan and even strike off in a northeasterly direction to Meshed-Lingah, the port of the Persian province of Larista-Bushire, which trades with Teheran via Shiraz and Ispahan, and Mohammerah for Shustar and Ispahan, and thence to the capital.

The trade of western and northwestern Persia is also carried on by a line of steamers up the Persian Gulf to the Turkish port of Busrah (Bassorah), there being transshipped to river steamers on the Tigris for carriage to Bagdad, whence goods are conveyed across the Turko-Persian frontier at Khanikin, and eventually reach Teheran via Kermanshah and Hamadan. The other transit routes through Asiatic Turkey are from the port of Alexandretta, on the shores of the Levant, via Aleppo, Mosul, and Tabriz, and from Trebizond, on the Black Sea, via Erzerum to Tabriz. The commercial avenues to Persia may, therefore, be summarized as follows:

Through Russian territory.—Via Tiflis, Tabriz, and Kazvin to Teheran; via Afghanistan; via the southern Caspian ports; via the Trans-Caspian Railway and the Khanates.

Through British India.—Via Afghanistan and Beluchistan

Direct from Persian Gulf ports.—Via Bunder-Abbas, Kerman, and Yezd; via Lingah and Laristan; via Bushire, Shiraz, and Ispahan; via Mohammerah, Shustar, and Ispahan.

Through Turkish territory.—Via Busrah, Bagdad, and Khanikin; via Alexandretta, Aleppo, Mosul, and Tabriz; via Trebizond, Erzerum,¹ and Tabriz.

LEO BERGHOLZ,

Consul.

ERZERUM, April 15, 1898.

INTERIOR FREIGHT RATES.

The overland-transport charges per ton to Teheran are at present from Bushire about 25 cents per mile; from Bagdad, about 20 cents per mile; from Trebizond and Tabriz, about 20 cents per mile, and from

¹ See Caravan Routes from Erzerum, p. 953.

Resht, 15 cents per mile. These charges vary considerably and have steadily increased of late years. From the above facts it is seen that on the whole the best route for American imports is that via Bushire, not only for the southern and central cities of Bushire, Shiraz, Ispahan, but also for Teheran. Transport over all these routes is by mule, donkey, and camel, and the few cases of American goods which reach Teheran invariably show inferior packing. It is useless to send merchandise, which is to be conveyed on the backs of animals for several months, and is to be loaded and unloaded daily by not overcareful muleteers, without special and careful packing.

ARTHUR S. HARDY,
Consul-General.

TEHERAN, *October 7, 1898.*

FOREIGN FREIGHTS.

In a report dated September 21, 1899, Consul-General Bowen, of Teheran, says that freights for ordinary merchandise from London to Bushire are about \$4.86 a ton. The cost and time of transport of goods from London to Teheran vary in no great degree whether sent by the Persian Gulf or the Black Sea and Asia Minor. By the latter route, however, goods are liable to inspection at Trebizonde, and a transit duty of 1 per cent is charged by the Turkish customs.

RUSSIAN RAILWAY ENTERPRISE.

According to the Berlin Tageblatt, Russia is projecting two railway enterprises in Persia, one to run southward from the city of Merv, in Turkestan, which is traversed at present by the trans-Caspian road constructed by the Russian Government. There is already an extension from Merv 250 miles southward to Kushk, which is being pushed on to Herat, the capital of Afghanistan. Concessions have been secured from the Persian Government for an extension from Herat in a southwest direction, the terminus to be at Bushire or Bandar Abbas, on the Persian Gulf.

The second project is for a line to run southeast from Tiflis, in the Caucasus, to Erivan, on the border of Armenia and Persia, and thence to Tibriz, Teheran, and Ispahan, probably crossing at right angles the line from Herat if Bushire is chosen as its terminus. About 100 miles north of Tiflis, with a practicable mountain pass intervening, is a railroad line which has through connections with Moscow and St. Petersburg. With this gap closed, the capital of Russia will, according to present plans, be in direct rail connection with the Indian Ocean.

SIAM.

Minister Barrett writes from Bangkok, July 31, 1897:

Siam is just far enough south to be under the influence of the Suez Canal, and not quite far enough to the east to get the benefit of the competition of steamship lines crossing the Pacific. There is a large fleet of steamers running between Hongkong and Bangkok, but as they have no through-rate arrangements with Pacific lines and do not cater to trade from such sources, the charges from Hongkong to Bangkok are sufficiently high to prevent competition of American goods in many lines which find a considerable and growing market in Hongkong, Shanghai, and Yokohama.

Regular communication with the United States is through Hongkong and Singapore. Perhaps the cheapest route is via Suez and Singapore. First-class freight steamers, averaging 800 to 1,000 tons, ply almost daily between Bangkok and the above-named ports. Exports shipped from the United States via New York can come direct to Singapore and be transhipped there to Bangkok. There are two steamers a month leaving New York for Singapore and the far East. Several trans-Atlantic companies have also lines running to Singapore and beyond.

Goods should be marked to be transhipped at Singapore when sent to Bangkok. Pacific-coast shipments come via Hongkong and are there transhipped. Therefore only one transfer is required from the Atlantic or Pacific seaboard to Bangkok.

Letters going direct commonly require forty to forty-five days, and three months are needed for replies.

Freight shipments would probably average sixty to eighty days in reaching Bangkok, unless given quick dispatch, when the time might be reduced to from forty-five to seventy days.

Bangkok has telegraphic connections with the outside world and all firms use the established codes. Freight rates have decreased during the last two years, but have not reached a sufficiently low point to materially aid United States shippers.

Telegraphic extensions include new lines into the interior and a submarine cable from the mainland to the island of Koh-Si Chang, the outer harbor of Bangkok.

The new railway of 150 miles, to Korat from Bangkok, is not yet completed, but is open for about 100 miles of its length. Other railroad projects, including lines to Chiengmai in the far north, Petchaburee to the southwest, Pachim and Petriew to the east, and Anghin to the southeast, are much discussed, and if built will add to the prosperity of Siam.

The principal means of travel and transportation consist now, as for ages in the past, of the numerous rivers and intersecting canals. One or two new canals have recently been constructed by private companies, but the Government is woefully lax in dredging and keeping open the old ones.

STRAITS SETTLEMENTS.

TRANSPORTATION FACILITIES.

Ocean.—The great ocean lines connecting Singapore with the ports of Europe and the far East, and by transshipment with those of the Atlantic and Pacific coasts of the United States, are: (1) The Compagnie des Messageries Maritimes (French); (2) The Peninsular and Oriental Steam Navigation Company (British); (3) The Norddeutscher Lloyd (German); (4) Austrian Lloyds Steam Navigation Company (Austrian); (5) The Compañia Transatlantica (Spanish); (6) The

Deutsche Dampfschiffs Rhederei (German); (7) The Ocean Steamship Company (British); (8) The Glen Line of Steam Packets (British); (9) The Navigazione Generale Italiana (Italian); (10) The Ben Line (British); (11) The China Mutual Steam Navigation Company, Limited (British); (12) The Nippon Yusen Kaisha (Japan).

The chartered steamers (freight only) of Messrs. Barber & Co., of New York, leave that port about twice a month for this place and ports of China and Japan; but these, though direct, are not regular and carry only freight.

Lines to adjacent States and colonies.—The British India Steam Navigation Company, Limited (British), Singapore, Calcutta, and intermediate ports; the Koninklyke Paketvaart Maatschappij (Dutch), Singapore and Batavia; the Messageries Maritimes (French), branch line, Singapore and Java ports, Singapore and Saigon; the Ocean Steamship Company (British), Singapore to Bangkok, Singapore to Saigon, Singapore to Netherlands Indies, Singapore to British North Borneo; Apcar and Jardine Lines (British), Hongkong to Calcutta, calling at Singapore; Sarawak and Singapore Steamship Company (Sarawak Government), Singapore and Kuching (Sarawak).

Coastwise and river lines.—There are numerous vessels engaged in the coasting trade of the Malay Peninsula between Singapore and Penang which call at the intermediate ports of Malacca, the Dingdings, Port Dickson, and Port Weld, and also proceed up the Klang and Perak rivers as far as navigable.

The Straits Steamship Company is the principal line in the trade, and the one which carries the regular mail.

Roads, railways, and canals.—There is a complete system of macadamized roads throughout the colony of the Straits Settlements, but since these are not commercial routes, they will not be considered in the present report. There are no navigable canals in the colony proper, no railways, and only about 10 miles of tramway, at Penang.

COMMUNICATION BETWEEN THE UNITED STATES AND SINGAPORE.

(1) From San Francisco, via Yokohama and Shanghai, to Hongkong, and thence by transshipment to Singapore via Saigon. (2) From New York to Europe and thence by transshipment, via Suez Canal and Colombo, to Singapore. (3) From New York to Singapore direct via Suez Canal and Colombo.

The first of these routes is the most expeditious from the Pacific coast, the second from the Atlantic coast. The third, though direct, consumes more time, from the fact of the steamers being slower, besides having as yet no fixed dates of departure.

FREIGHT.

Freight to London in 1897 ranged from 12s. 6d. to 37s. 6d. (\$3.03 to \$9.11) per ton, Singapore scale. This year it ranged from 27s. 6d. to 52s. 6d. (\$6.68 to \$12.75).

To the United States (New York), 1897, it ruled from 15s. to 22s. 6d. (\$3.64 to \$5.46) per ton, Singapore scale; present rates are from 20s. to 25s. (\$4.86 to \$6.07) per ton, Singapore scale.

To San Francisco via Hongkong: To Hongkong, \$3 per ton, without any deviation since last year; to San Francisco as per schedule; to Calcutta as per schedule.

E. SPENCER PRATT,
Consul-General.

SINGAPORE, November 16, 1898.

PACIFIC MAIL AND OCCIDENTAL AND ORIENTAL STEAMSHIP COMPANIES.

Rates of freight from Hongkong to San Francisco on the undernoted cargo, shipped on through bills of lading signed in the Straits Settlements, Java ports, Aden, Colombo, or Bombay, exclusive of transfer expenses at Hongkong. All rates in United States gold coin:

Cardamoms, in cases	per picul ¹ ..	\$0.90
Cassia, in boxes or bales	per ton of 40 feet..	6.50
Castor seed.....	per picul..	.80
Cinnamon, in bales:		
Lots of 100 bales or over	do.....	} 1.42
Lots under 100 bales.....	do.....	
Cinnamon, in bags.....	do.....	
Cloves, in bags.....	do.....	1.13
Cocanut oil, in hogsheads.....	do.....	.75
Cocoa, in bags.....	do.....	.75
Coffee, in bags.....	do.....	.62½
Copra, in bags.....	do.....	.70
Cotton seed	do.....	1.45
Dry hides	per ton of 40 feet..	10.00
Dates:		
Wet	per picul..	.50
Dry	do.....	.75
Ebony	per pound..	.00½
Essential oils.....	per cent ad valorem..	1
Gambier:		
Block—		
Lots of 25 tons or over	per ton..	.50
Lots of less than 25 tons	do.....	.55
Cube—		
Lots of 25 tons or over.....	do.....	.55
Lots of less than 25 tons	do.....	.75
Ginger:		
Wet.....	per ton of 40 feet..	8.00
Dry.....	per picul..	.70
Goatskins.....	per ton of 40 feet..	13.00
Gum copal:		
Lots of 5 tons or over.....	per picul..	.67½
Lots of less than 5 tons	do.....	.70
Gunnies.....	per ton of 40 feet..	6.00
Hemp seed.....	per picul..	.75
Indian condiments	per ton of 40 feet..	8.00

¹ 1 picul = 133½ pounds.

Indigo.....	per ton of 40 feet..	\$15.00
Jute.....	do.....	7.00
Kapok.....	do.....	5.00
Linseed.....	per picul..	.70
Mace.....	do.....	1.00
Nutmegs.....	do.....	1.00
Paddy.....	do.....	.50
Pepper:-		
Lots of 25 tons or over.....	do.....	.65
Lots of less than 25 tons.....	do.....	.75
Plumbago, in packages.....	do.....	.50
Pineapples.....	per ton of 40 feet..	8.00
Rattans.....	per picul..	1.50
Rice, in bags.....	do.....	.50
Sago:		
Lots of 25 tons or over.....	do.....	.45
Lots of less than 25 tons.....	do.....	.50
Salt peter.....	do.....	.60
Shellac.....	per ton of 40 feet..	10.00
Stick-lac, in lots of 10 tons or over.....	per picul..	.70
Sugar, refined, in bags.....	do.....	.30
Tapioca:		
Lots of 25 tons or over.....	do.....	.53
Lots of less than 25 tons.....	do.....	
Tin.....	do.....	.20
Turmeric.....	do.....	.70
Tea and desiccated cocoanuts.....	do.....	8.00

Schedule of rates of freights from Singapore to Calcutta, per steamers of Messrs. Apcar & Co., the Indo-China Steam Navigation Company, Limited, and the British India Steam Navigation Company, Limited.

Goods.	Rates.	
	By direct steamers.	By indirect steamers.
Dried ginger, coffee, cassia, gamboge, dry chillies.....	per picul, gross.. \$0.60	\$0.55
Gambler, China roots, glue, garlic, galangal, Japan wax.....	do..... .50	.45
Copra, pepper, sago, tapioca, gum dammar, gum copal, stick-lac, bamboo, camphor, wild nutmegs, munsils.....	per picul, gross.. .45	.40
Sugar, tin, copper, iron.....	do..... .35	.30
Betel nuts.....	do..... .40	.35
Rattans, sandalwood, sapanwood, hides, malacca canes.....	do..... .60	.55
Cubebs, nutmegs, mace, cloves:		
In bags.....	do..... .75	.70
In cases.....	per 50 cubic feet.. 8.00	7.50
China camphor, in cases or casks, piculs, 1 to 1.25.....	each.. .75	.70
Malay camphor, valuable.....	per \$100.. 1.25	1.20
Treasure:		
Specie, up to \$25,000.....	do..... .25	.25
Specie, over \$25,000.....	do..... .20	.20
Matches.....	per case.. 2.00	1.75
Gum benjamin.....	do..... .65	.60
Hemp.....	per bale.. 1.50	1.35
Measurement goods, cigars, tea, tobacco.....	per 50 cubic feet.. 8.00	7.50
Empty bottles:		
In cases or boxes.....	do..... 5.00	4.50
In baskets of 12 cubic feet.....	per basket.. 1.50	1.40
Timber, in logs.....	per 50 cubic feet.. 8.00	7.50
Planks.....	do..... 7.00	6.50
Genetry seeds:		
Cheap quality.....	per picul.. .50	.45
Valuable kind.....	per \$100.. 1.25	1.20
Gold and silver ware and jewelry.....	do..... 1.25	1.20
Putch leaf.....	per bale.. 1.00	.90
Arrack or rum.....	per cask.. 4.00	3.50
Silk goods.....	per 50 cubic feet.. 10.00	9.00

Schedule of rates of freights from Singapore to Calcutta—Continued.

Goods.	Rates.	
	By direct steamers.	By indirect steamers.
Kayu putch oil, in cases, about 5 cubic feet..... per case..	\$0.75	\$0.70
China cups and plates..... per roll 10 inches..	.15	.12
China cups and plates, in baskets..... per basket 7 feet 8 inches..	.50	.45
Flowerpots, in baskets..... per basket 5 feet..	.50	.45
Carriages:		
Four-wheeled..... each..	40.00	40.00
Two-wheeled..... do.....	30.00	30.00
Horse, without attendant..... do.....	40.00	40.00
Pony, without attendant..... do.....	30.00	30.00
Tiger, including one attendant..... do.....	60.00	60.00
Cockatoos..... do.....	.50	.50
Orang-outangs..... do.....	10.00	10.00
Monkeys:		
Small..... do.....	.50	.50
Large..... do.....	1.00	1.00
Kasiwarie (birds)..... do.....	5.00	5.00
Ricebirds (small)..... per \$100..	5.00	5.00
Tapirs..... each.....	25.00	25.00
Malacca canes..... per bundle..	1.00	.95
Matting..... 2 rolls in 1 basket..	.50	.45
Matting..... 4 rolls in 1 basket..	1.00	.96
Vermillion..... in case.....	.90	.85
Other articles not enumerated in proportion to above.		

TURKEY IN ASIA.

RAILWAYS IN SYRIA.

Consul Ravndal writes from Beirut, March 20, 1899:

The chief organizers of the Syria-Ottoman Railway Company are Mr. J. R. Pilling, Effingham House, Arundel street, Strand, London, and Mr. H. Hills, of the Thames Iron Works, London. The proposed capital is \$5,000,000, but no shares will be put on the market, so it is said, until the line is completed as far as Nazareth. The road will run from Haifa, a seaport town 75 miles south of Beirut, to Damascus, a distance of some 142 miles, and the project includes an extension from Damascus to Bagdad and the Persian Gulf. While the Jaffa-Jerusalem (53 miles), the Beirut-Damascus-Hauran (153 miles), and the Lebanon Tramway (10 miles) are narrow-gauge concerns, the Haifa-Damascus Railway will be standard width. It is primarily intended to tap the great Hauran wheat regions, which are only partly developed, being still under the sway of Bedouin and Druze tribes, and to afford another outlet for the growing trade of Damascus, the largest city in Asiatic Turkey. Active operations commenced last month on the division between Haifa and the Jordan, and the line is to be completed in less than two years as far as Damascus. Sir Douglas Fox (28 Victoria street, London) is the chief engineer of the Syria-Ottoman Railway, while Dr. G. Schumacher (civil engineer and United States consular agent) is superintendent of works at Haifa, assisted by Mr. H. T. Foord, agent of the company. The Thames Iron Works being crowded with orders, it is likely, so I am informed, that rails, locomotives, and other material will be bought in the United States.

OTHER MEANS OF COMMUNICATION.

Consul Doyle writes from Beirut, October 14, 1897:

Land transport is by mules, donkeys, and camels. Caravans rarely come to Beirut since the completion of the railway to Damascus. Regular lines of Austrian, British,

French, Russian, and Turkish steamers touch at Syrian ports at intervals of from one to two weeks.

The "actual means and times of communication with United States ports" is, for passengers, from 18 to 21 days, via Alexandria, Marseilles, and Havre; for freight, from 30 to 40 days, including delays in loading or unloading cargoes at intermediate ports. Freight charges on goods sent to the United States are from 40 to 50 per cent lower than on those sent from the United States to Syria.

GERMAN AND AMERICAN STEAMSHIP LINES.

Consul Ravndal, of Beirut, under date of September 25, 1899, sends an extract from the June number of *Le Trafic l'Exportation*, a German trade publication, as follows:

It was decided last year by the German Steamship Company for the Orient to dispatch steamers direct from Hamburg to the Levant without having them complete their cargoes at Antwerp, as was formerly the case. This change has gained them a whole week on each trip and greatly encouraged exportation. The new steamers of this line make Malta in nine days, Piræus in eleven, Smyrna in thirteen, Constantinople in fifteen, and Odessa in twenty days. One of these special steamers leaves Hamburg the last day of each month. Since the introduction in Germany of reduced direct rates (in consequence of an agreement between the German State railways and the Levant line of steamers) the freight on goods for the Orient via Hamburg is lower than from other European ports—Trieste, for instance—and the only remaining obstacle, the length of the journey, has now been removed by the rapid monthly steamers.

The Consul adds:

Since the beginning of this year, Barber & Co., of New York, have been running direct boats for Greece and the Levant every four weeks (due in a large measure to the efforts made by Consul-General Dickinson), and this service should command the undivided support of all concerned, in the absence of American vessels. Barber & Co. have occasionally dispatched a direct boat to Beirut. I am confident we shall be able, sooner or later, to organize things so as to be able to offer sufficient inducements for a Barber & Co. steamer to call on the Syrian coast regularly at intervals of about six weeks.

Freight rates are no longer prohibitive. They have been considerably lowered of late years. But while this is very important, it also means much to the merchant whether his goods spend six months in transit (suffering damage from transshipments) or are sent through by direct route, carefully handled, in twenty-five days.

The Prince Line rates for New York, Boston, and Philadelphia are given below.

Oriental goods, cottons and silks, wooden and copper works, glassware, etc., \$9.72 per ton (40 cubic feet).

Wool in bales, \$14.58 per ton (1,000 kilograms).

Provisions, spirits, etc., \$14.58 per ton (1,000 kilograms).

Barber & Co. will, no doubt, do better than this. Their rates for incoming freight in the case of the last shipment by the Stalhein averaged \$7.90 per ton. As to freight charges, Consul Doyle reported only two years ago (October 14, 1897) as follows: "The average freight rate per ton from Beirut to New York is \$12.20 per ton, while \$17.50 is the average rate from New York to any Syrian port."

TRANSPORTATION FACILITIES FOR PALESTINE.

Consul Wallace, under date of Jerusalem, August 21, 1896, says:

With the exception of the Jaffa and Jerusalem Railway, a narrow-gauge line connecting these two cities, there are no lines of railway in Palestine. This line is 53

miles in length. There are good carriage roads leading east, west, and south from Jerusalem. The road eastward connects with Jericho, 18 miles distant; that to the west goes to Jaffa, from which point a road leads along to the seacoast northward to Haifa. The road southward from Jerusalem extends to Hebron, 20 miles. This whole system of carriage roads, about 130 miles, is of recent construction, and forms one of the few evidences of progress. Apart from these, all transportation from the interior must be done on camel and doukey back. The grain from the fertile fields east of the Jordan is all conveyed to market in this way, and while the rates of transportation are cheap, considering the animals and men necessary, they add considerably to the price of the commodity. The camel and doukey routes threading the country are mere trails, along which travel is slow and difficult.

Jaffa is the only seaport, and has in reality no harbor. In fact, the particular part of the coast on which Jaffa stands is one of the most dangerous, and in stormy weather vessels do not attempt to communicate with the shore. It happens once or twice each year that for ten days or two weeks no landing can be made. But in spite of such difficulties several lines of steamers from European cities connect with Jaffa. The following shows the regular lines of steamers from English and other Mediterranean ports:

The Austrian Lloyd, headquarters at Trieste. Eight regular steamers of this line touch at Jaffa each month, four going toward Egypt and four going northward to points along the Syrian coast. This company carries four classes of freight at the following rates from Jaffa to Trieste:

	Per ton.
First class (manufactured articles generally)	\$21
Second class (groceries).....	6
Third class (hardware).....	12
Fourth class (fruits)	7

The Messageries Maritimes Cie. has its headquarters at Marseilles, France. The vessels of this line touch at Jaffa every week—one week going south to Egypt and on to Marseilles direct, the next going north to Beirut, Constantinople, Piræus, and Marseilles. It carries three classes of freight, charging \$20, \$12, and \$8, respectively, per ton, from Jaffa to Marseilles. Owing to severe competition and other causes, the rates quoted above as charged by the Austrian Lloyd and Messagerie Maritimes companies are sometimes reduced 50 per cent.

The other steamship companies whose vessels call at Jaffa are the Russian Company, of St. Petersburg; the Khedive Company, of Alexandria; the Faber Company, French company; Bell Line and Knott's Prince Line, of Liverpool. By this line, it is proposed to run fortnightly steamers from Liverpool to the Syrian coast.

FREIGHT RATES FROM ALEXANDRETTA.

Consul Washington, writing from Alexandretta August 3, 1897, says:

Communication with the United States is effected by steamers to Manchester, Marseilles, Trieste, and Alexandria, Egypt, in which places goods are transhipped. Freight rates are high, ruling from \$13 to \$18 per ton, dead weight, for small shipments.

At rare intervals an English steamer of the Prince Line touches here, bound for the United States, and freight in quantity can then be sent for as low as \$3.75 per ton, or 42 cubic feet.

Licorice root, which, as is shown by the above schedule, forms by far the largest article of export to the United States, is conveyed by sailing ships chartered for the purpose. These vessels are almost invariably under the Italian flag, and the transportation averages about \$3.50 per ton.

CARAVAN ROUTES FROM ERZERUM.

Consul Bergholz writes from Erzerum, October 15, 1897:

There are five great caravan routes from Erzerum: (1) Erzerum to Trebizonde, requiring ten days by horse or country wagon; the cost of transportation is \$4.40 per 300 pounds. (2) Erzerum to Bitlis, requiring nine days by horse and fourteen by wagon; cost of transportation per 300 pounds is from \$4.40 to \$6.60. (3) Erzerum to Van, twelve days by wagon; transportation charges, \$3.96 to \$8.97. (4) Erzerum to Diarbekir, ten days by wagon, and cost per 300 pounds \$3.52 to \$5.40. (5) Erzerum to Tebriz, Persia, taking thirty-five days by camel, and with transportation charges from \$3.30 to \$9 per 300 pounds, depending, however, upon the supply of camels. The custom-house expenses on goods in transit between the Persian frontier and Trebizonde amount to 13 cents per bale in Erzerum and 9 cents per bale in Trebizonde. An agent, both at Erzerum and Trebizonde, will undertake the whole custom-house expenses of transit, including commission, for 35 cents a bale.

Facilities of transport are the great need of the country. Wagons can only be used during a small portion of the year, and the usual means of conveyance consists of horses and camels. The Persian transit trade is wholly by camels. Goods are sent at the owner's risk, the camel driver being responsible for their proper care only so long as he has them in his possession. He can not insure them against the Kurdish robbers, who seldom hesitate to attack a caravan and help themselves to anything they or their families may be in need of. The drivers are Persians, and receive but \$2.20 a trip. Erzerum has lost considerable of the transient trade of Persia, owing to several causes, of which the chief is the building of the railroad between Batum and Poti to Tiflis.

TRANSPORTATION FROM SMYRNA.

Consul Lane writes from Smyrna, January 10, 1899:

There are two railways connecting Smyrna with the interior. One runs northeast 240 miles, the other southeast 200 miles. They are owned and controlled by English and French capital, and the service is good. Freight rates are one-third higher than on American roads. This is owing chiefly to the flat cars, which are very small and run upon four wheels instead of two sets of trucks, as do American cars, and to the necessity of bringing railroad coal from England by ship. The price of coal varies greatly, often being \$9 and never less than \$5 per ton. Anthracite coal is unknown.

Under date of July 19, 1898, Consul Madden, of Smyrna, says:

The following is a full list of the steamship lines whose ships either touch at or sail directly from this port on regular schedule. The first four named are subsidized mail lines: Compagnie Russe de Navigation à Vapeur et de Commerce, Florio-Rubertino, Lloyd Austriaco, Messageries Maritimes, Compagnie Anversoise, Compagnie Havroise Péninsulaire, Compagnie Orientale (Pantaléon), Compagnie Royale Néerlandaise, Compagnie Panhellénique, Courdji, Cunard Line, Cuppa Lambros, Deutsche Levanté Linie, Fraissinet et Cie., A. C. de Freitas, H. Genestal & Belzous, Glafcke & Henning, Hadji Daout Farkouh, Mahsonsseh, James Moss & Sons, Papayanni & Co., N. Paquet et Cie, Prince Line, Wescott & Lawrence, Wilson, Khedival Mail.

There is one steamer every week to and from England.

COMMUNICATION WITH SIVAS.

Consul Jewett sends the following, dated Sivas, October 10, 1898:

No railways exist in Ahatolia east of Angora and Konia. They are desired by the Government, and German companies are seeking concessions for building lines from

Samsoun or Sinope to Sivas, and for extending existing lines from Angora and Konia via Sivas to Bagdad. The Government, however, wishes roads built on strategic rather than commercial lines, and it is doubtful if an agreement can be arrived at. A line from Angora via Gosgat has been surveyed this summer in the interests of a German company, but as the road would find little traffic in proportion to its length and cost, it is doubtful if they can get the kilometric guaranty they will require.

Under date of September 26, 1896, Mr. Jewett gives details as to interior transportation, as follows:

Samsoun is 200 miles (seven days' ordinary travel, twelve days' for caravan) distant from Sivas. Transportation in the interior is by means of camels, horses, mules, and wagons. There are no fixed rates for transport. Goods should be strongly and solidly packed, and protected by waterproof covers. For camels, each package may weigh from 200 to 280 pounds; for horses, 150 to 200 pounds; for mules, 75 to 80 pounds; for wagons, 1,200 to 1,500 pounds. Warehouses are provided at the custom-houses.

The roads are poor and much out of repair. There are no regular caravans or other means of transportation. They come and go according to the demands or as the state of the country will permit.

AUSTRALASIA.

NEW SOUTH WALES.

Sydney is the metropolis of Australasia, and the terminus of all the steamship lines trading to this continent. The following terminate at this port:

Peninsular and Oriental Steamship Company, running between Sydney and London via ports, leave here every alternate Monday, carrying mails and passengers. The saloon fare is from £60 to £70 (\$291.96 to \$340.62) and the rate of freight from £2 7s. to £2 10s. per ton (\$11.43 to \$12.16).

Orient Steamship Company run a splendid fleet of steamers every alternate Monday; consequently this gives a weekly direct boat to London. The fares and freights are about the same as the Peninsular and Oriental Company.

Messageries Maritimes Company is a French line, with a line of fine vessels, furnishing a monthly service to Marseilles. Fares and freight about the same as the two foregoing.

Norddeutscher Lloyd Company run a monthly service between Sydney and Amsterdam, with a line of modern steamships, carrying mails and passengers, with fare and freight rate about the same as the foregoing lines.

In addition to these regular mail and passenger lines, there are the North German Lloyd's to Germany, the China Navigation, and the Eastern, and Australian steamship companies to Hongkong and the East, with a fare of £33 (\$160.58) and a freight of about 25s. per ton (\$6.08).

The Oceanic Steamship Company has three excellent steamships running between Sydney and San Francisco. Two are American built, and they average about 3,000 tons gross each. These are the only two steamers trading here carrying the American flag. The average saloon fare is £40 (\$194.64), and the average freight rate 40s. to 50s. (\$9.73 to \$12.18). The voyage averages twenty-five days, and is a monthly one.

The Canadian Pacific Company has two fine steamers trading between Sydney and Vancouver, carrying mails, passengers, and cargo. This is a monthly service, and occupies about twenty-four days. The fares and freight are about the same as on the Oceanic Steamship Company, and these are the only two lines of steamers carrying goods direct to America. In addition to these lines, there is the Port Line, White Star, Lund's, trading to London, with passengers and cargo, at regular intervals, besides the regular "ocean tramps," which come "seeking," during the favored seasons of the year. Over four-fifths of Sydney's trade is carried by steam.

The intercolonial trade is carried on by steamers of the Adelaide, Australian United, Huddart Parker, Howard Smith, and Union steamship companies. The fleets of these companies comprise fine vessels of the most modern type, and the fares and freight rates are very reasonable.

RAILWAYS.

All the principal lines of railway in this colony are owned and operated by the New South Wales Government, and are conducted on the most efficient lines.

There is a total mileage of standard-gauge railroads in this colony of 2,351 miles.

The following table will show the freight rates:

Distance.	Special classes.			Numeral classes.		
	Miscellaneous	A.	B.	First.	Second.	Third.
1 to 10 miles	\$0.27	\$0.48	\$0.52	\$1.14	\$1.28	\$1.56
25 miles .....	.62	.82	1.12	2.43	2.89	3.79
50 miles	1.16	1.46	2.13	2.61	5.57	7.55
100 miles	2.00	2.43	4.19	8.79	10.87	14.98
200 miles	3.65	4.54	7.62	16.09	19.74	27.62
300 miles	6.08	5.86	10.05	21.18	26.76	15.58
400 miles	7.30	7.22	12.49	28.28	32.69	45.51
500 miles	7.09	8.56	14.92	31.39	39.09	54.45

H. M. RENNIE,
Vice-Consul.

SYDNEY, September 21, 1896.

NEW ZEALAND.

Auckland is the port of call of the great Oceanic Steamship Company's steamers and the headquarters of the Northern Steamship Company, and is constantly visited by boats of the Union Steamship Company, the New Zealand Shipping Company, and of numerous other lines. It is also the terminus of the steamers which are engaged in the South Pacific island trade and of the Fiji trade under the Union Steamship Company's flag. Wellington has direct service to Sydney, and is also a great distributing point for the colony. Lyttleton is the headquarters of the New Zealand Shipping Company. It has an excellent dock, which is available for repairs, the space inclosed between its breakwater being about 110 acres. The average time within which mails were delivered last year by the San Francisco service was: From Auckland to London, 32.54 days, and from London to Auckland, 34.31 days. The shortest delivery was made in 32 days. The maximum, minimum, and average number of days within which the mails were delivered at and from London and Auckland, Wellington, Dunedin, and Bluff during 1896 by the San Francisco contract system or service and by the Peninsular and Oriental and Orient lines were:

	San Francisco service.			Peninsular and Oriental Line.			Orient Line.		
	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.
London to Auckland	39	32	34.31	47	38	40.54	45	39	42.19
Auckland to London	35	32	32.54	45	38	40.32	45	37	40.50
London to Wellington	41	34	38.00	46	38	40.96	49	38	41.81
Wellington to London	37	33	34.46	46	39	42.63	47	37	41.45
London to Dunedin	42	35	37.23	47	39	42.75	49	39	42.94
Dunedin to London	38	35	35.54	48	39	42.08	49	38	41.44
London to Bluff	43	36	37.98	46	38	42.00	48	36	42.19
Bluff to London	39	36	36.29	47	38	41.33	48	37	40.69

The question of renewing it or establishing an alternate service with Canada is being considered by Parliament. The distance between Auckland and San Francisco via Apia, Samoa, and Honolulu is 5,938 miles, and 17-knot boats can easily make the voyage in fifteen days; and allowing four and one-half days for transit between San Francisco and New York and six days between New York and Queenstown, it would be possible for the colony's mails to be delivered in London in about twenty-five days.

In proof of the foregoing, I will say that the new steamer *Moana*, which was built for the San Francisco mail service, replaced the *Mono-wai* in June last. The *Moana* is a vessel of 4,000 tons gross register and 4,000 indicated horsepower, having excellent accommodation for 180 saloon and 116 second class passengers. She is fitted throughout with the latest and most approved appliances, the engines being triple expansion, with forced draft. On her trial trip she easily made 17 knots

an hour with light draft. Her several trips to and from San Francisco have been most successful, mails having been delivered under eighteen days both ways—more than two days under contract time.

To one who has made the long, monotonous voyage between San Francisco and Auckland—twenty full days—there can be no doubt that a quicker and better service will be demanded.

RAILROADS.

A remarkable increase in the railroad traffic of the colony has been noticed during the past twelve months. Satisfactory progress has been made in railway construction during the year. The "Makaran tunnel," which has been in course of construction for over seven years, has finally been completed, and trains are running through it. Work has also commenced on the long-contemplated Makoline viaduct, on the North Island Main Trunk Railway. There are other important railway works in hand and progressing satisfactorily. The line between Eketohuna and Woodville is nearing completion.

Tracks and roads are being made to open the picturesque scenery of New Zealand to the European and American tourists. By this means, the celebrated West Coast Islands, 13 in number, will be made more accessible. There is scenery on the west coast of this province which is terra incognita even to the natives, and which, later, will undoubtedly attract the tourists of America, weary of the hackneyed routes of continental travel.

TELEGRAPH.

There are 6,284 miles of telegraph line and 16,470 miles of wire in New Zealand. The number of telegrams of all codes for the past year was 2,520,169, an increase of 395,958 over the year 1896. There are 723 inland-mail services (excluding services by railway). The use of bicycles as a means of facilitating the delivery of letters and telegrams has been extended in the past year with good results, but the boom in the bicycle trade and the consequent high prices of the machines have prevented the Government from deciding upon any particular pattern.

FRANK DILLINGHAM,
Consul.

AUCKLAND, *October 29, 1897.*

QUEENSLAND.

The internal transportation facilities are by means of railways, owned and operated by the Queensland Government. The total length open for traffic is 2,635 miles. Lines start from each of the principal coast ports of Queensland, viz, Brisbane, Maryborough, Bundaberg, Rockhampton, and Townsville, and run into the interior. Communication with the distant cattle ranches and sheep stations is by means of bul-

lock drays. There are no rivers suitable for transportation more than 50 miles from the mouth.

There is regular steamer service, both passenger and cargo. Rates of freight are kept moderate by competition.

The ocean transportation from the United States is by a line of steamers from New York via the southern ports of Australia, and also by sailing vessels. Several lines of steamers ply from Great Britain via other Australian ports, and one line of mail steamers, viz, the British India Steamship Company, plies direct between Queensland ports and Great Britain via Torres Straits and Batavia.

Queensland is being brought into closer communication with the United States by a line of steamers between New York and Brisbane. The time occupied by sailing vessels was about one hundred and twenty days, whereas now the time is less than half, with a very small increase in the rate of freight.

There are 95 steam vessels, of a tonnage of 13,810, and 143 sailing vessels, with a tonnage of 9,994, registered in Queensland. The steam vessels are employed in the coasting trade and the sailing vessels in the trade with the South Sea Islands, bringing colored labor to Queensland to work the sugar plantations. There are no vessels owned in Queensland employed in trade with other countries.

W. J. WEATHERILL,
Consular Agent.

BRISBANE, *December 9, 1898.*

SOUTH AUSTRALIA.

Transportation is carried on in South Australia by railways, by sea, and by river. The colony has about 1,800 miles of railways open for traffic. The enormous coast line of over 2,000 miles gives special facilities for water carriage, while the River Murray is navigable for the whole of its course in South Australia—about 700 miles. No railways are in course of construction, but the Government intends introducing a bill to authorize the construction of a line to the Queensland border, a distance of 300 miles, and of another to Auguston, 24 miles. Communications with the other colonies are by rail and sea.

Communication with the United States may be had by steamer to England and thence to America; by rail to Sydney (1,100 miles) and thence by the Union Steamship Company's steamers to San Francisco, or by an occasional sailing vessel from Port Adelaide to America. It is two years since such an opportunity offered. The first of these routes occupies forty-two days, the second thirty-five days, and the third about one hundred days.

Exporters do not complain that freights are excessive.

CHAS. A. MURPHY,
Consular Agent.

ADELAIDE, *June 28, 1897.*

POLYNESIA.

FIJI.

There are three lines of steamers calling regularly at these islands, so there is no lack of means of transportation. The Union Steamship Company of New Zealand is the most important, sending three steamers per month from Auckland. Steamers of the same company go to San Francisco, Sydney, Samoa, and Tonga Islands. Interinsular steamers run between the islands of this group.

The Huddart-Parker Line steamers call at Suva, Fiji, en route to Vancouver and Sydney, New South Wales. We have thus straight communication by two good lines with the United States.

The Australasian Steam Navigation Company sends one and sometimes two steamers a month from Sydney to Suva and Levuka.

BENJAMIN MORRIS,
Commercial Agent.

LEVUKA, *October 21, 1897.*

HAWAII.

The steamship lines plying between the coast of America and Honolulu are the Oceanic Steamship Company, the Oriental and Occidental Steamship Company, and the Pacific Mail.¹

One steamer of the Oceanic Line, the Australia, makes Honolulu her destination; the two other steamers of the line, after discharging passengers and freight, go on to Samoa and Australia. The steamers of the two other lines proceed to Japan and China. The time from San Francisco to Honolulu by steamer is from six to seven days.

The Canadian-Australian Royal Mail Steamship Company's steamers, sailing from Vancouver and Victoria, stop at Honolulu and then proceed to Australia and New Zealand.

There are a number of fine sailing vessels making regular trips between Port Townsend and San Francisco and Honolulu, with limited passenger accommodations. The price is \$40 for cabin passage.

FREIGHT RATES.

The rates of freight from here to San Francisco are: For steamers, \$5 per ton and 5 per cent primage; sailing vessels, \$3 per ton and 5 per cent primage.

The rates to Atlantic ports range from \$5 to \$7 per ton, with 5 per cent primage.

The duration of the voyage between here and New York has been from 89 to 134 days.

¹Note by Bureau of Foreign Commerce: Also, at the present date, the Japanese Mail, plying between San Francisco and Chinese and Japanese ports.

RAILROADS.

There are three railroads on the islands. The Kahului Railroad, on the island of Maui, is 13 miles long; the Hawaiian Railroad, on the island of Hawaii, is about 20 miles long. These two roads are used principally to carry the products of the plantations to the various points of shipment. The principal road on these islands is the Oahu Railway and Land Company line, which runs from Honolulu to Waianae, the total length, including sidings, being 38.5 miles. This road was opened for traffic July 1, 1890, since which time its business has shown a steady increase, both in its passenger and freight traffic.

Last year, the road carried 85,596 passengers, receiving a revenue of \$30,993.50; 66,430.49 tons of freight were carried, earning \$69,752.76.

The equipment consists of 5 locomotives, 14 passenger coaches, and 132 freight cars.

The road is bonded for \$2,000,000, at 6 per cent, with \$700,000 worth of stock, which is to be increased to \$1,500,000.

WILLIAM HAYWOOD,
Consul-General.

HONOLULU, *September 30, 1897.*

NEW RAILWAY.

The Scientific American, New York, October 21, 1899, says that the construction of a new railway on the island of Hawaii will soon be commenced. It will connect the port of Hilo with Mahukona, on the north-western coast, and will have a total trackage, including branches, of 130 miles. It will be run by electrical power, and be of standard gauge. With the new road, the time from Honolulu to Hilo will be only thirteen instead of from thirty-six to thirty-nine hours.

STEAMSHIP SERVICE BETWEEN HAWAII AND TAHITI.

Minister Sewall, of Honolulu, on February 5, 1898, reports that the French Government contemplates the establishment of a line of steamers between Honolulu and Tapeete, Tahiti. The colony of Tahiti has voted an annual subsidy of \$30,000 for the proposed line. This would be a branch of the Messageries Maritimes. Passengers and freight, he says, which now go by sailing packet between Tahiti and San Francisco will be transshipped at Honolulu.

OCEAN PASSAGE RATES.

The Hawaiian Annual, 1899, has the following:

Cabin passage per steamer, Honolulu to San Francisco, \$75; round-trip tickets, good for three months, \$125; steerage passage per steamer, Honolulu to San Francisco, \$25; cabin passage per steamer, Honolulu to Victoria and Vancouver, \$75, and to San Francisco per company's steamer arrangements, if desired, at the same figure.

Second cabin passage per steamer, Honolulu to Victoria and Vancouver, \$25.

Cabin passage per steamer to Fiji, \$87.50; to Sydney, \$150.

Second cabin passage per steamer to Fiji, \$50; to Sydney, \$75. Cabin passage by sailing vessel, to or from San Francisco, \$40, or \$25 by steerage.

Cabin passage per steamer, Honolulu to Hongkong or Japan, \$250.

Steamers to and from San Francisco are two or more every four weeks—one direct and return, the others en route to or from the colonies and the Orient. Steamers of the Canadian-Australian line to and from Vancouver are also two every four weeks. Steamers from San Francisco to Japan and China, and vice versa, touch almost regularly at this port en route.

Interisland passage rates.

Cabin passage per steamers, from Honolulu to—

Lahaina, Maui	\$5. 00
Kahului or Hana, Maui	6. 00
Maalaea, Maui	6. 00
Makana, Maui	8. 00
Mahukona or Kawaihae, Hawaii	10. 00
Kukuihaele, Honokao, or Paauhau, Hawaii	10. 00
Laupahoe or Hilo, Hawaii	12. 50
Kailua or Kealahou, Hawaii	10. 00
Honwapa or Punaluu, Hawaii	12. 00
Koloa, Nawiliwili, Hanalei, Kilanea, or Kapaa Kanai, each	6. 00

Round-trip tickets are usually obtained at a fair reduction, with privilege of getting off at any port along the route.

NEW CALEDONIA.

Nouméa is connected with various parts of the world by three lines of ships, running regularly:

The Compagnie des Messageries Maritimes (French), whose fine boats call monthly direct from Marseilles, touching on their way thither at Colombo, Ceylon, Albany, Adelaide, Melbourne, and Sydney.

The E. and A. Company (British), plying between Australia and the islands of the Pacific monthly.

The L. Ballande & Fils Ainé Company (French), a tramp line running between Newcastle, Australia, and this port.

The following vessels (steam) belonging to the Messageries Maritimes, the oldest and most powerful steamship company of France, are employed in the New Caledonian service:

Name of vessel.	Tonnage.	Horse-power.
Armand Béhis	6,537	7,200
Ville de la Clotat	6,531	7,200
Australien	6,507	7,200
Polynésien	6,506	7,200
Tanals	1,824	1,600

The first four of these steamers are fine ships.

Among the large number of sailing vessels calling at New Caledonia, the line of French clippers, averaging 4,000 tons each, and represented by a local firm, M. Berthelin & Co., may be mentioned.

PAUL EUGENE WOLFF,
Commercial Agent.

NOUMÉA, November 1, 1898.

Under date of April 7, 1898, Vice-Commercial Agent Reichenbach, of Nouméa, notes that the A. U. Navigation Company gives fortnightly service between the colony, Australia, New Hebrides, and Fiji, and the French New Hebrides Company a monthly mail service between Nouméa and the islands of Sydney. There is also, he says, a fortnightly line of mail steamers in the coast service.

SHIPPING LINE TO NEW CALEDONIA.

I am glad to report that the principal obstacle to United States trade with this district, viz, the lack of direct communication, is about to be removed. In a letter dated June 14, 1899, Messrs. Macondray & Co., merchants of San Francisco, inform me that they are about to send a sailing vessel of 1,000 tons register every three months direct to Nouméa, which they hope to keep employed regularly in the trade. This line of vessels is to supply this colony mainly with food products from California, which are to be consigned to an American commission house at Nouméa.

Return cargoes of minerals, copra, coffee, vanilla, pearl shell, bêche de mer, and other colonial commodities will be furnished.

As the commerce of New Caledonia, which for the past year has been growing very rapidly, is daily assuming much larger proportions, this line, in addition to the regular monthly steamship service referred to in my report of the 24th of June last,¹ between San Francisco and Saigon, via Honolulu, Tahiti, Nouméa, and Manila, is certain to aid largely the development of trade between this colony and the Western States.

United States shipping this year will also be larger than ever before. The second vessel, the *Newsboy*, from Puget Sound, which arrived here with lumber, is about to return to the United States. A third vessel with a similar cargo, consigned to Messrs. Jouve & Co., of Nouméa, is on the way, and a fourth, with some 400 wooden cottages from Messrs. Renton Holmes & Co., of San Francisco, for the famous nickel mines at Thio, east coast of New Caledonia, is expected.

PAUL EUGENE WOLFF,
Commercial Agent.

NOUMÉA, July 28, 1899.

PROPOSED STEAMSHIP LINE TO NEW CALEDONIA.

Under date of June 24, 1899, Commercial Agent Wolff writes:

At a recent meeting of the provincial council of New Caledonia, the question of granting a subsidy for steamers to run at regular intervals between Tahiti and Tonkin, via New Zealand and New Caledonia, was discussed. Propositions from a French and a New Zealand company were considered. United States trade would be promoted by steamship service between San Francisco and Tonkin, via Honolulu, Tahiti, New Caledonia, and the Philippine Islands. The subsidy asked for by the

¹ See below.

steamship company of New Zealand from the New Caledonian council is 250,000 francs (\$48,250). It is probable that at least 150,000 francs (\$28,950) would be granted by Tahiti, and 500,000 francs (\$96,500) by the Government of Tonkin. Four steamers of 2,000 tons each, two of which could be furnished by a firm of Nouméa, would be sufficient for the service.

PHILIPPINE ISLANDS.

The following, dated Sydney, February 7, 1899, has been received from Consul Bell:

I would report, for the possible benefit of our traveling or commercial people, that three steamship lines plying between Australia and China and Japan are now calling regularly at the port of Manila, Philippine Islands. These are the China Navigation Company, the Eastern and Australian Steamship Company, and the Nippon Yusen Kaisha (a Japanese line). Each of the companies has four fairly good and well-equipped steamers, averaging 2,500 tons, and, as each line makes monthly trips, there is a call at Manila about once in ten days from Australia, and from Chinese and Japanese ports. These are not new lines, but their regular call at Manila has been arranged since the islands came into our possession. There is already considerable business, both in freight and passenger traffic, between Sydney and Manila, and there is great confidence in shipping circles that the trade will soon become very important.

STEAMSHIP SERVICE BETWEEN SINGAPORE AND THE PHILIPPINE ISLANDS.

Consul-General Pratt, of Singapore, under date of April 19, 1899, transmits to the Department copy of a letter addressed by him to General Otis, at Manila, in which he states that upon relinquishing his position in the consular service he contemplates the establishment of a line of steamers under the American flag, to ply between Singapore and the different ports of the Philippines, especially the southern ones, which can be reached with special facility by way of British North Borneo. Such a line of steamers, of sufficiently light draft to enter the shallower island harbors, would, Mr. Pratt thinks, be useful for the transportation of troops and supplies. The boats would, in the first place, be at the disposal of the Government. and serve, secondarily, for the convenience of the public.

SAMOA.

There are no lines of railway, no canals, no navigable rivers, no wagon routes, and no caravan trails. Communication within the group is held by small sailing vessels and by one small steamer, the *Vaosa*, of 90 tons, built this year in this Kingdom, and documented to carry the American flag. Communication with the larger world is maintained by the line of vessels engaged in the mail service between San Francisco and Sydney, New South Wales, and the interisland vessels of the Union Steamship Company of New Zealand.

The mail service employs three steamers, two the property of the Oceanic Steamship Company of San Francisco (John D. Spreckels & Bro.), the American ships *Alameda* and *Mariposa*, and the British steamer *Monowai*, owned by the Union Steamship Company of New Zealand. The service consists of 13 trips a year, one vessel each way calling at Apia every twenty-eight days for a stop of from two to five hours, according to the amount of freight to be handled and the state of the weather. The voyage from Apia to San Francisco is fifteen days.

The Union Steamship Company runs two vessels a month between Sydney and Auckland by way of Levuka, Fiji, and Apia. These vessels are the *Taviuni* and the *Ovalau*, small and slow vessels, but quite up to the requirements of the island trade. Freight rates to and from the Australian colonies by these vessels are in marked contrast with the high rates charged by the mail line on freight from San Francisco. I cite the instance of flour: The freight from San Francisco is \$12 a ton; from Sydney but \$7.50. It is to be said that the agents of the mail line have made efforts to secure cargoes for the trip toward the American market by offering very low rates on copra shipments.

WILLIAM CHURCHILL,

Consul-General.

APIA, *September 27, 1896.*

SOCIETY ISLANDS.

Consul Doty writes from Tahiti, May 31, 1897:

At this time, there is a line of three American sailing ships making monthly trips between Tahiti and San Francisco. By these vessels about 65 per cent of the trade of the colony is carried. There is, however, great necessity for steam communication with the United States, inasmuch as the distance is 3,650 miles. It is needless to say that the trade of the United States with the colony would vastly improve with the establishment of steam communication.

Between Tahiti and Auckland, New Zealand, a distance of 2,400 miles, one British steamer makes monthly trips, carrying about 20 per cent of the trade. While these are the two most important lines of communication, there is also a line of three French sailing vessels plying between Tahiti and France, making three trips per annum. As for interisland communication, there are several lines established between important points.

INDEX.

[The following index is arranged under eight general heads, viz: (1) Bridges, grades, trestles, tunnels, and viaducts; (2) Canals; (3) Coastwise and intercolonial commerce; (4) Highways; (5) Inland navigation, as distinct from canals; (6) Ocean lines—names of lines and vessels calling at and departing from the several ports, tonnage and horsepower, itinerary, etc.; (7) Railways—history, cost of construction, termini, and main points touched. Under each of these heads, the subjects are arranged geographically, viz: Africa, America, Asia, Australasia, Europe, and Polynesia, the countries being arranged alphabetically under each continent. Subjects which could not be indexed under any of the foregoing heads are alphabetically arranged under "(8) Miscellaneous."]

1. BRIDGES, GRADES, TRESTLES, TUNNELS, AND VIADUCTS.	
AMERICA:	Page.
Canada—British Columbia (trestle spanning the Niagara Canyon) ..	30
South America—	
Bolivia (iron bridge over the Cahama River)	130
Colombia (iron bridge over the Chagres River)	99
Peru (bridges and tunnels on the Peruvian Central Railway)	123-126
ASIA:	
British Asia—	
Ceylon	573, 574
Bridges and tunnels, on the Kaduganawa incline, 573; iron bridges over lagoon and river, 574.	
India (bridges)	570
China (viaducts and bridges, not railway)	612
Dutch India—Java	594, 595
Bridges over the Solo and Brantas rivers, 594; viaducts, 595.	
Japan (engineering difficulties overcome)	615
Turkey in Asia—Syria (heavy grades over the Lebanon Mountains)	526
AUSTRALASIA:	
New South Wales (switchbacks on the Blue Mountains)	625
EUROPE:	
Mont Cenis Tunnel (history of its building)	363-367
Germany (railway bridge over the Rhine at Mayence)	323
Holland	236, 238
Rhine bridge, Lek bridge, Waal bridge, Maas bridge, 236; bridge over the Merwede, Rhine bridge, Yssel bridge, 238.	
Italy (roadbed cut out of the solid rock, and one-half the line runs through tunnels)	371, 372
Russia (engineering difficulties, bridges, curves, gradients, etc., on the Great Siberian Railway)	412, 414
Spain	299, 700-702
Bridges, tunnels, and gradients on the Barcelona-Saragossa Railway, 299; names and length of tunnels on all Spanish railways, 700-702; engineering difficulties encountered, 702.	
Sweden (bridges and tunnels on Swedish lines)	425
UNITED KINGDOM:	
Wales (grades, bridges, and tunnels)	201

2. CANALS.		Page.
AFRICA :		
French Africa—Tunis.....		440
Madagascar.....		451
Turkey in Africa—Egypt (Suez Canal, description and trade)		446, 447
AMERICA :		
Canada.....		19-34
Beauharnois, 23; cost of and traffic on Canadian canals, 19, 20; Canal Commission, United States and Canada, 26; Cornwall, 24; Farrans Point, 24; Galops, 24; Lachine, 23; Rapide Plat, 24; Rideau, 34; Sault Ste. Marie, 25; Welland, 24; Williamsburg, 24.		
Central America (Nicaragua Canal).....		77
Mexico.....		58-59
American, 58; Chijol, 58; Tempoal, 59.		
South America :		
Brazil.....		118
Colombia (Panama).....		101
ASIA :		
China (Grand Canal).....		597
EUROPE :		
Austria-Hungary.....		338
Belgium.....		334, 716-718
Length of canals, 716; canalization of the Meuse, 716; Meuse-Scheldt Canal, 716 Charleroi-Brussels Canal, 717; Central Canal, 717; recent works, 717; railways v. waterways, 718; Belgian canals compared to those of neighboring countries, 718.		
France.....		278, 705-707
Mileage of canals, 705; canalization of the Rhone, 705; improvement of the Rhone, 706; development of canals, 707.		
Germany.....		323, 713, 714
Official list of canals, 323; Baltic and North Sea Canal, 325, 715; Dortmund-Ems-haven Canal, 713; Dortmund-Rhine Canal, 713; Rhine-Weser-Elbe Canal, 714; canals of South Germany and Alsace-Lorraine, 714.		
Greece.....		389
Holland.....		708-710
Canal system, 708; Meerwede Canal, 710.		
Interior waterways of northwest Europe.....		704-728
Benefit of canals, 722; thoroughness of the canal system of northwest Europe, 727.		
Norway.....		423
Russia.....		394
Sweden.....		426
United Kingdom—		
England.....		167-177
British canal statistics, 167; Air and Calder, 169; Birmingham and Liverpool, 177; Chester, 177; Ellesmere, 172; Grand Junction, 174; Leeds and Liverpool, 171; Manchester Ship, 171, 175; Montgomeryshire, 172; Regents, 173; Sheff-field and Tinsley, 175; Shrewsbury, 172; Shropshire, 171; Surrey, 174.		
Ireland.....		177-179
Ballyconnell, Ballymore, Barrow, 177; Coal Island, 179; Grand, 177, 178; Lagan, 177, 179; Lough Corrib, 177; Lower Bann, 177; Lower Boyne, 177; Newry, 177; Royal, 177; Ulster, 177, 179.		
Scotland.....		180-183
Caledonia, 182; Crinan, 183; Forth and Clyde, 181; Monkland, 182; ship canal (proposed), 183; Union, 180.		

3. COASTWISE COMMERCE.

	Page.
AFRICA:	
British Africa—Somali Coast	469
AMERICA:	
Canada—	
British Columbia	29, 30
Pacific Coast Steamship Line; Canadian Pacific Navigation Line, 29; Puget Sound and Alaska Steamship Line; the Comax Line, 30.	
New Brunswick	35, 36
International Steamship Line; Bay of Fundy Line, 35; Grand Manon Line, 36.	
Prince Edward Island	40
Central America—British Honduras	73
South America—	
Argentine Republic	149, 150
Brazil (laws regulating)	112
British Guiana	696
Chile	138
Venezuela	103
West Indies, British—Bermuda	81
ASIA:	
British Asia—Straits Settlements	581-583
Lines to adjacent states and colonies, 581; coastwise, 583	
China	605
Dutch Asia—Java	593
Spanish Asia—Philippines	620
AUSTRALASIA:	
New South Wales (intercolonial)	623
New Zealand	646, 648
Coastwise, 646; intercolonial, 648.	
Victoria	635
EUROPE:	
Denmark	241
France	246
Bordeaux	261
Boulogne	268
Havre	259
Marseilles	249, 250
Greece	387
Italy	358
Palermo	375
Norway	421
Russia	393, 408
POLYNESIA:	
Fiji Islands (intercolonial)	651
Hawaii (interisland)	656
Tahiti (interisland)	654

4. HIGHWAYS.

AFRICA:	
British Africa—	
Cape Colony	472
Central Africa	485, 486
Mauritius	460
Sierra Leone	509
Somali Coast (road improvements)	469

	Page.
AFRICA—Continued.	
Madagascar	452
Portuguese Africa—Angola.....	498, 500
Orange Free State.....	476
Turkey in Africa—Egypt.....	447
AMERICA:	
Canada—	
British Columbia.....	31
New Brunswick.....	36
Nova Scotia.....	38
Central America—	
British Honduras.....	73
Costa Rica.....	79
Honduras.....	73
Mexico	67-69
Vera Cruz road; Cuernavaca road; Mexico-Potosi road, 68; San Luis Potosi-Victoria road; Mexico-Acapulco road, 69.	
South America:	
Bolivia	130
British Guiana.....	108, 696
Brazil	115
Chile	137
Ecuador	120
Paraguay.....	140
Uruguay.....	146
West Indies—	
British West Indies	79, 81, 86
Bahamae, 79; Bermuda, 81; Jamaica, 86.	
Haiti	85
Spanish West Indies—Puerto Rico.....	86
ASIA:	
British Asia	570, 571
Ceylon, 571; India, 570.	
China	598, 600, 608
Highways and ancient road building in China, 598, 600, 608.	
Japan	612
Korea	617
Maskat	532
Persia	532, 536
Ancient road builders, 532; highways, 536.	
Turkey in Asia	517, 526, 530
Asia Minor, 517; Syria, 526; Palestine, 530.	
AUSTRALASIA:	
New South Wales.....	627
Victoria.....	638
EUROPE:	
Austria-Hungary	343, 347
Imperial highways, 343; Bohemian macadamized highways, 347.	
Denmark	245
France	281
Germany	326, 331
Greece.....	389
Italy	368
Genoa roads, 372; Palermo roads, 377.	
Malta	386

EUROPE—Continued.

	Page.
Norway	424
Spain	300
Sweden.....	425
Switzerland	337
United Kingdom—	
England.....	184-186
British highways, 184; Liverpool highways, 185; English middle counties' roads, 186.	
Ireland	188, 219
Scotland.....	187, 214
Wales	202

POLYNESIA :

Fiji Islands	653
Tahiti	654

5. INLAND NAVIGATION.

[Rivers and lakes, as distinct from canals.]

AFRICA :

British Africa—Central Africa.....	480-488
Shire and Zambesi rivers, and Lakes Nyassa and Tanganyika, 484, 485, 486, 488.	
Congo Free State.....	504-507
The Upper and Lower Congo, 504, 506, 507.	
French Africa—Tunis (lake leading to the port of Bizerta).....	440
German Africa—Cameroons.....	491, 492
Sanaga River, 491; Rio del Rey, 492.	
Madagascar	451, 452
Portuguese Africa—	
Angola (River Quanza).....	498
Mozambique (Zambesi and Shire rivers, and Lake Tanganyika)....	464
Turkey in Africa—Egypt.....	445, 446
The Nile, 445, 446.	

AMERICA :

Canada (St. Lawrence River and Great Lakes; Ottawa and Richelieu rivers).....	20-22
New Brunswick (St. John River).....	26
Central America (San Juan River and Lake Nicaragua).....	76
Mexico	58-61
Lakes: Chairel (58), Laguna de la Madre, and Terminos (59). Rivers: Armeria (61), Coahuayana (61), Coatzacoalcos (59), Chacala (61), Champoton (61), Colorado (61), Concepcion (61), El Moratillo (58), Gonzalez (60), Grihalva (60), La Balsa (61), Mamantel (61), Mayo (61), Mazatlan (61), Mescalupa (60), Panuco (58, 59), Papaloapam (59), Piginto (61), Presas (59), Rio Grande (58), Rio Verde (61), San Juan (59), San Pedro (60, 61), Santiago (61), Soto la Marina (59), Tanchiochapa (60), Tehuantepec (61), Tempoal (59), Tuxpam (59), Usumacinta (60), Yaqui (61).	
South America—	
Argentine Republic (La Plata, Parana, and Uruguay rivers).....	150
Bolivia	193-196
The Amazon, 133, 135; Desaguadero River and Lake Titicaca, 134; Parana and Paraguay rivers, 135; Purus, Madre de Dios, Beni, and Guapore rivers, 136; Paraguay River, 185.	
British Guiana (rivers).....	107, 696
Brazil	116, 117
Rivers: Amazon, Paraguay, and La Plata, 116; San Francisco and Parana, 117.	
Ecuador	120, 121

AMERICA—Continued.

South America—Continued.

	Page.
Paraguay	139, 142
Rivers: Rio Apa, Paraguay, and Parana, 139, 140. River lines: Platense, Fluviales, and Lloyds, 142.	
Uruguay (La Plata: Uruguay to Buenos Ayres)	145
Venezuela	103, 104
Rivers, 103; Lake Maracaibo, 104.	

ASIA:

British Asia—Straits Settlements	583
China	597-608
Chinese waterways, rivers, and lakes, ancient and modern, 598, 599, 601, 604; Grand Canal, 597; Imperial Canal, 604; Tientsin to Peking, 608.	
Japan	612
Korea (Seoul to Chemulpo)	617
Spanish Asia—Philippines	637
Turkey in Asia—	
Asia Minor (the Meander and the Hermus)	517
Bagdad (traffic on the Tigris; English and Ottoman Steamship Companies)	518-521

AUSTRALASIA:

Victoria (the Murray and Yarra rivers)	637
--	-----

EUROPE:

Austria-Hungary	338-353
The Danube and its tributaries, 338; the Draa, the Theiss, the Save, the Elbe, 339, 347; the Moldau, 347; the Danube in Hungary, 353.	
Belgium	235, 716-718
Antwerp-Brussels, 238; the Meuse and the Scheldt, 716, 717; waterways v. rail-ways, 718; Belgian waterways as compared with those of neighboring countries, 718; Belgian water traffic, 719.	
France	705
Cost and mileage of waterways, 705; the Rhone, 705.	
Germany	711-715
The German Rhine, 711; the Elbe, 712; the Main, Moselle, 715.	
Holland	708-710
Interior waterways system, 708; the Rhine, Wahl, and Meerwede, 709; develop-ment of traffic, 710.	
Italy	358, 359
Lakes: Garda and Como, 358; Lugano and Maggiore, 359. The Tiber River, 359.	
Norway	423, 424
Lakes: Miosen, Randsfjord, and Nordajo, 423; Glleren, 424.	
Russia	394, 497
Rivers: The Volga and Rama, 394, 395; total interior waterways: the Volga, the Rybinsk, the Kama, the Dniwa, the Dniester, the Dnieper, etc., 406, 407.	
United Kingdom—	
Scotland (the Clyde)	209
Wales (the Severn)	202

6. OCEAN LINES.

[Names of lines and steamers calling and departing from the several places mentioned; tonnage and horse power; itinerary; terminal and intermediate ports touched; freight and passenger rates; condition of lines; accommodation; frequency of communication; ownership, etc.]

AFRICA:

British Africa—

Cape Colony (Cape Town)	471
Mauritius (Port Louis)	459
Natal (Port of Durban: Castle Mail Packet Company)	477
Sierra Leone	509

AFRICA—Continued.

	Page.
French Africa—	
Algeria	431
Tunis	438
German Africa—	
Cameroons	491
East Africa	494, 495
Southeast Africa	493
Togoland	490
Kongo Free State	502
Madagascar	453-457
Castle Line, 453; Messageries Maritimes, 453-456; Austrian Lloyd; Havre Penin- sular Line, 456.	
Morocco	427-430
Portuguese Africa—	
Angola (Loanda)	497
Madeira	514, 515
Union Steamship Company, Castle Mail Packet Company, British African Steam Navigation Company, Booth Line, Mersey Steamship Line, Africa- nish Dampfschiffs-Actien-Gesellschaft, 514; Hamburg-südamerikanische Dampfschiffahrts-Gesellschaft, Empresa Nacional de Navegação, and Empresa Insularia de Navegação, 515.	
Mozambique	460-462
German East African Line, 460; Union Steamship Company, 461; Castle and Clan Lines, etc, 462.	
Tripoli	442, 443
Turkey in Africa—Egypt	450
Zanzibar	470

AMERICA :

Canada—	
British Columbia (Canadian Pacific Line; Canadian-Australasian Line; Northern Pacific Line)	28
New Brunswick (Furness Line; West India Line)	35
Newfoundland	38
Nova Scotia	38
Prince Edward Line (Charlottetown)	38, 39
Central America—	
British Honduras (Belize: New Orleans and Belize Royal Mail and Central American Steamship Company; New York-Belize Line; Harrison Line)	72
Guatemala (Pacific Mail Steamship Line; New York, Belize and Central American Line)	71
Nicaragua	75
Mexico	66, 67
New York and Cuba Mail, German Imperial Mail, Harrison Line, Mexican Line, Spanish Transatlántica, Compagnie Générale Transatlantique, 65; New York, Mobile and Mexico Line, Gonzales Line, French Commercial Line, Berreteago & Co.'s Line, Pacific Mail Line, Redo Line, Isaguirre & Co.'s Line, Sinaloa and Durango Railway Line, 66; Pacific Coast Line, Morgan Line, Maldonado Line, Royal Mail Packet Company, Hamburg-American Packet Company, etc., 67.	
South America—	
Argentine Republic (Buenos Ayres)	147-149
Royal Steam Packet Line, Pacific Steam Navigation Line, Lamport & Holt Line, Chargeurs Réunis Line, Messageries Maritimes, General Steam Transportation Line, 147; La Veloce Steam Line, Italian Steam Navigation Line, Imperial North German Lloyd, Bremen and La Plata Line, Ham- burg-South American Line, Kosmos Line, Norton Line, Knott's Line, 148; Passage and freight rates, 149.	

AMERICA—Continued.

South America—Continued.

	Page.
British Guiana.....	106, 697
Brazil (Rio de Janeiro).....	108-111
British lines, 108; German lines, 109; Italian, Austrian, French, and Brazilian lines, 110; American lines and tramp steamers, 111; schedule of passenger rates from Rio de Janeiro, 742, 743.	
Chile (Valparaiso).....	138, 139
South American Steamship Line, Pacific Steam Navigation Line, Gulf Line, 138; Merchants' Line, 139.	
Colombia (Panama).....	90-97
South American Steamship Line, 90; Pacific Steam Navigation Line, 91; North American Navigation Line, 92; Pacific Mail Line and freight rates, 93-97.	
Ecuador (Guayaquil).....	118-120
Pacific Steam Navigation Line and the Compañía Sud-América Line, 118; Gulf Line and Hamburg-Pacific Line, 119; French Pacific Line, Pacific Steam Navigation Line, Kosmos Line, and Merchants' Line, 120.	
Peru (Callao).....	125-128
Uruguay (Montevideo).....	144, 145
Royal Mail Line, Pacific Steam Navigation Line, Messageries Maritimes, Chargeurs Réunis, Norddeutscher Lloyd, Navigazione Generale Italiana, La Veloce Line, Hamburg-Südamerikanische Line, and Kosmos Line, 144; Hansa Line, Compañía Transatlántica Line, Lloyds Brasileiro, and Lamport & Holt Line, 145.	
Venezuela (Maracaibo: Red D Line).....	103
West Indies—	
British West Indies.....	80, 81, 87
Bahamas, 80; Bermuda, 81; Jamaica, 87.	
Haiti.....	85
Santo Domingo.....	86
Spanish West Indies (Cuba).....	82, 83
United States—	
Ocean lines leaving United States ports.....	661-696
Baltimore (for Germany, Holland, Central America, Mexico, and West Indies).....	682-684
Boston (for Great Britain, Belgium, and British Provinces).....	684-686
Eastport.....	687
Los Angeles.....	694
New Orleans (for Great Britain, France, Holland, and Germany).....	689-691
Newport News.....	688
New York.....	664-679
For Great Britain, 664; Germany, France, 665; Holland, Belgium, Baltic, Spain, Mediterranean, 666; China, Japan, Africa, South America, 667; Central America, West Indies, Mexico, 668.	
Pensacola (for Central America, Mexico, and West Indies).....	693
Philadelphia (for Great Britain, Germany, Belgium, Central America, Mexico, and West Indies).....	680-682
Port Townsend.....	693
San Diego.....	694
San Francisco.....	691-693
China and Japan, 691; Panama, Honolulu, and Australasia, 692.	
Tampa (for West Indies).....	691

ASIA:

British—

Page.

Ceylon 570, 571

Peninsular and Oriental Line, British India Line, Messageries Maritimes, North German Lloyds, Bibbe Line, Orient Line, 570; Ocean Steamship Line, Henderson's, City, Clan, Glen, and Anchor Lines, Austrian Lloyds, Rubattino Line, Russian Volunteer Fleet, Japanese Line, Asiatic Steamship Line, Deutsche-Australische Line, Hamburg Line, Ceylon Steamship Line, tramp steamships, 571.

India 562-569

Bombay: British India Steam Navigation Line, 562; Anchor and Peninsular and Oriental Lines, 563; Florio-Rubattino, Austrian Lloyds, Hall Line, and Messageries Maritimes, 564; Japan Steamship Company, 565; distances from Bombay, 566, 569.

Calcutta: Peninsular and Oriental Line, 560; Clan Line, Messageries Maritimes, Anchor Line, Asiatic Steam Navigation Line, British India Steam Navigation Line, City Line, Indo-China and Apar Lines, 561; freights, 562.

Hongkong 608-610

Pacific Mail and Occidental and Oriental Lines, 608; Canadian Pacific and Douglas Steamship Lines, 609; Northern Pacific Steamship and Peninsular and Oriental Steamship Companies, 610.

Straits Settlements 578-583

Messageries Maritimes, 578; Peninsular and Oriental Steamship Line, and Norddeutscher Lloyd and Austrian Lloyd Lines, 580; Compañía Transatlántica, miscellaneous lines, British India Steam Navigation, Koninklijke Paketvaart Maatschappij, 581; Ocean Steamship, Apar, Jardine, and Sarawak, and Singapore Lines, 583.

Dutch India—Java 591-592

Stoomvaart Maatschappij Nederland, Rotterdam Lloyds, Queensland Royal Mail, Peninsular and Oriental, and Messageries Maritimes Lines, 591; routes, 591; condition and equipments and passenger and freight rates, 592.

French Asia (Saigon: Messageries Maritimes) 617

Japan (Kanagawa: Japan Mail, Occidental and Oriental, Canadian Pacific, and Peninsular and Oriental Lines) 615, 616

Korea (Seoul) 617

Maskat (British India Steam Navigation Line) 531

Spanish Asia—Philippine Islands (Manila: Compañía Transatlántica and new opposition line) 619

Turkey in Asia—

Asia Minor (Smyrna: Ocean lines) 517

Palestine (Jaffa: Austrian Lloyds, Messageries Maritimes, Russian Steam Navigation, Khedive, Faber, Bell's Asia Minor, Knott's, and Machaussieh Lines) 527-530

Syria (Beirut) 522-525

Messageries Maritimes, 522; Austrian Lloyds, 523; Compagnie Russe, 524; Khedive Line, 525.

AUSTRALASIA:

New South Wales (Sydney) 621-623

Peninsular and Oriental, Orient, Messageries Maritimes, Norddeutscher Lloyds, German Australian, and China Navigation Lines, 621; Eastern and Australian, Port, Oceanic, Canadian Pacific, White Star, Lund's, and Gibb Lines, 622.

Intercolonial lines: Adelaide Steamship Company, Australian-United States Navigation Company, Huddart-Parker Company, and Union Steamship Company, 623.

New Zealand (Auckland) 639-646

New Zealand Shipping Company, 639-642; Shaw, Savill & Albion Company, 643, 644; Shire Line, 644; Oceanic Line, 645; sailing ships, 646.

EUROPE—Continued.

United Kingdom—Continued.

England—Continued.

	Page.
London	190-196
Orient Line, 190; McIlwrath-McEacharn Line, Peninsular and Oriental Line, Bibby Line, New Zealand Shipping Line, Castle Line, Aberdeen Line, 191; Macandrew Line, Anglo-Australasian Steam Navigation Line, Aberdeen Line; Shaw, Seville & Albion Line, Houlder Line, National Line, 192; Red Cross Line, Wilson Hill Line, Atlantic Transport Line, Furness Line, 196.	
Southampton	193, 194
American Line, North German Lloyd, Royal Mail Steam Packet Line, 193; Union Line, 194.	
Ireland (Belfast)	222, 223
Lord Line, Head Line, Liverpool Line, Fleetwood Line, 222; Glasgow Line, general statistics of lines, 223.	
Scotland (Glasgow)	204-208
Allan, Anchor, and Donaldson Lines, United States, 204-208.	
Wales (Cardiff and Swansea)	195-197
POLYNESIA:	
Fiji	650-652
United Steam Navigation Company, 650; Union Steamship Company of New Zealand, 651; Canadian-Australian Line, 652.	
Hawaiian Islands	657, 658
New Caledonia (Noumea)	630
Tahiti (American Line and New Zealand Line)	654

7. RAILWAYS.

[History, cost of construction, termini and main points touched, length of lines and distances between main points, condition of lines, number and gauge of tracks, frequency of communication, freight and passenger rates, obstacles overcome in construction of lines, grades, viaducts, bridges, etc.]

AFRICA:

British Africa—

Cape Colony	472
Mauritius	457
Natal	478, 479
Sierra Leone (proposed railway)	510

French Africa—

Algeria	431-436
Senegal	513
Tunis	441

German Africa—East African Possessions

Kongo Free State	494
Madagascar	505

Portuguese Africa—

Angola	497
Mozambique	462, 463
Delagoa Bay Railway and Transvaal extension, 462; Beira Railway, 463, 467.	

Orange Free State	473-476
-------------------------	---------

Turkey in Africa—Egypt	448, 449
------------------------------	----------

Zanzibar	470
----------------	-----

AMERICA:

Intercontinental Railway (routes, surveys, concessions, etc.)	88
---	----

Canada (system and mileage of the Dominion)	19
---	----

AMERICA—Continued.

Canada—Continued.

	Page.
British Columbia (Esquimalt and Nanaimo).....	30
Manitoba.....	31-33
Northern Pacific, Canadian Pacific, 31; Great Northern, 33.	
New Brunswick (Canadian Pacific, Intercolonial, Shore Line).....	36
Newfoundland.....	38
Nova Scotia.....	37
Prince Edward Island.....	40
Ontario.....	33, 34
Canadian Pacific 33; Canada Atlantic, 34.	

Central America—

British Honduras.....	73
Costa Rica.....	78
Guatemala.....	72
Honduras.....	73
Nicaragua.....	76

Mexico..... 42-58

Mexican, 42; Mexican Central, 43; Mexican National, 45; Monterey and Mexican Gulf, 49; Mexican Southern; Hidalgo and Northwestern, 50; Sonora, 51; Alvarado, 52; Manzanillo and Colima, Sinaloa and Durango, 53; Tehuantepec, 54; Tehuantepec Railway, and the Tehuantepec and Panama Canals as trade routes, 55; minor railways, 56; Merida and Progreso, 58; Merida and Peto, Merida and Valladolid, Merida and Campeche, 57; Merida and Izamal, 58.

South America:

Argentine Republic.....	150-152
Buenos Ayres, Rosario and Tucuman, 150; Eastern Argentine, Buenos Ayres and Great Western, 151; Buenos Ayres and Southern, 152.	
Bolivia.....	128-133
Antofagasta and Bolivia, 129; railway connections; Arica Railway; Mollendo and Puno, 131.	
Brazil (lines in operation and lines projected).....	113, 729
Names, termini, gauge, length of lines, results of traffic during the year 1892, lines under Government and State supervisions, guaranteed capital, etc., etc., 729-741.	
British Guiana.....	107, 696
Chile.....	136, 137
State lines, 136; private lines, 137.	
Colombia (Panama Railway).....	98
Ecuador.....	120
Paraguay.....	141
Peru.....	121-125
Entire system turned over to an English company, 121; termini and intermediate points of system, 122; Henry Meiggs and William Henry Cralley, builders of Peruvian railways, 124.	
Uruguay.....	145, 146
Ferrocarril Central del Uruguay, 145; Nordeste, Extension Este; Noroeste; Midland; Norte del Uruguay; Del Norte, 146.	
Venezuela.....	104-106
Mileage in operation; contemplated lines, 104; Ceiba railway extension; Encontrado to La Fria, 105; Maracaibo to Periga, 106.	

West Indies:

Cuba.....	83
Haiti.....	85
Jamaica.....	86
Porto Rico.....	86

ASIA:

British Asia—	Page.
Ceylon	570-577
India	543-570
History of Indian railways, 543-548; standard dimensions, 548-553; length of lines, 553; expenditures, 554; fares and freights, 555; the several lines and their ownership, 556; Indian railway acts governing inspectors, 557; traffic facilities, 558; Government ownership, 559; acknowledgments for statistics supplied, 560.	
Western India railways: Great Indian Peninsular; Bombay, Baroda and Central India; Southern Mahratta, 569; Indian Midland, 570.	
China	598, 607
Dutch India—	
Java	594, 595
State railways, 594; private railways, 595.	
Sumatra (State and private lines)	596
Japan	612
Malay States	585-590
Selangor railways, 585-588; Sungle Ujong railways, 588-590; Perak railways, 590.	
Spanish Asia—Philippine Islands	618
Turkey in Asia—	
Asia Minor	517
Palestine	530
Syria	525

AUSTRALASIA:

New South Wales	623
New Zealand	648
Victoria	637

EUROPE:

Austria-Hungary—	
Austria	338-343
Under Government contract, 338; the Südbahn, 339; the Nordbahn, 340; Staats-Eisenbahn-Gesellschaft; Austrian State, 341; fares and freight rates, 342, 343.	
Bohemia	344-346
State railways; private railways, 344; condition and passenger rates, 345; zone divisions and freight rates, 346.	
Hungary	348-353
Royal Hungarian State railways; Imperial and Royal Incorporated Southern, 348-349; zone traffic, 350-352; international transit; grades, tunnels, and bridges, 352.	
New tariff rates	702
Belgium	234, 235
Bulgaria	392
Denmark	244, 245
Ownership; south line; west line, 244; north line; freights, fares, and traffic, 245.	
England. (<i>See</i> United Kingdom.)	
France	270-278
General system, 270; termini and main points touched, 272-276; train accommodations and charges, 276; express and freight rates; condition of lines, 277; accidents; engineering difficulties, 278.	
Germany	315-334
State railways, 315, 316; private railways under Government control, 316; private railways under private management, 317-319; administration, 319; traffic, charges, etc., State railways, 320, 321; administration, traffic, charges, etc., private railways, 322; railways converging at Frankfort on the Main, 327-330; Luxemburg railways, 331-334.	

EUROPE—Continued.

	Page.
Gibraltar	303
Great Britain and Ireland. (See United Kingdom.)	
Greece	387-389
Holland	235-238
System, 235; State railway—termini, traffic, charges, routes, points touched, etc., 235-237; Dutch railway—length, capital, dividends, termini, traffic, etc., 237, 238.	
Ireland. (See United Kingdom.)	
Italy	359-376
Early railways and laws providing for the building of railways, 359; Mediterranean system, 360; Adriatic system, 361; Sardinian railway and traffic, 362; management, freight charges, fares, etc., 363; railways converging at Genoa, 372; railways converging at Palermo, 376.	
Luxemburg	331
Malta	386
Norway	424
Russia	395-420
St. Petersburg-Moscow-Nishni-Novgorod (Nicholaevsk) line; St. Petersburg-Warsaw line; Baltic Railway; Finland Railway; termini and main points, 395, 396; tracks; communication; passenger rates, 397, 405; new zone system; freight charges, 398, 405; classification of freight, 399-402; differential rates, 402; ownership and length of lines, 403, 404; Government regulations, 406; Great Siberian Railway: History of, 409; geographical and technical features, 411; estimate of cost of, 414; progress of construction, 415; miles of rails laid, 418. Finland State railways, 418-420.	
Spain	298, 299, 700-702
First railway in; Tarragona, Barcelona and Frontier of France Railway, 298; Barcelona, Reus and Saragossa Railway, 299; tunnels and bridges, 700-702; engineering difficulties, 702.	
Sweden	425
Switzerland	335-336
Northeastern line and United Swiss line—cost, traffic, etc., 335; speed and accommodation, freight rates, engineering difficulties, 336.	
Turkey	389, 390
United Kingdom (mileage, capital, passengers conveyed, and traffic) ...	165
England	153-166
System, origin, development, etc., 153-156; Lancashire and Yorkshire Railway, 156; Manchester, Sheffield and Lincolnshire Railway, 157; railway carriages and wagons, 157; rates of freight, 158-165; early English railways, 166.	
Ireland	215-219
System, carriages, speed, improvements, etc., 215; Great Northern Railway, 216; Belfast and Northern Counties Railway, 218; Belfast and County Down Railway, 219.	
Scotland	210-214
Caledonian Railway, 210-212; Glasgow and Southwestern, 212, 213; North British Railway, 213; West Highland Railway, 214.	
Wales	197-201
Welsh railways—trade, traffic, condition, etc., 197-199; passenger and freight rates, 199; speed of trains, character of service, 200; grades, bridges, and tunnels, 201.	

POLYNESIA:

Fiji	653
Hawaiian Islands	655

MISCELLANEOUS.

American trade opportunities in Uruguay	145
Bank in Central Africa	486

	Page.
Caravans and caravan trade:	
Egypt	450
Persia	541
Somali Coast.....	468
Tripoli	443
Caravansaries in Persia.....	534
Coal fields of Wales.....	194
Cotton exports for German East Africa.....	496
Engineering difficulties:	
Ceylon, railway.....	573
China	597, 601
Grand canal, 597; old highways, 601.	
France, railway.....	278
Hungary, railway.....	352
India (Midland Railway).....	570
Italy (Genoa Railway).....	371
Japan, railway.....	613
Java, railway.....	564, 565
Mont Cehis Tunnel.....	363
Russia (Great Siberian Railway).....	411-413
Spain, railway.....	259, 702
Syria (Lebanon Mountain Railroad, grades).....	526
Free transit in German East Africa.....	496
Geography and topography:	
Angola	497
British Central Africa.....	480
German Africa—	
Camerouns.....	491
East Africa	493
Southwest Africa.....	493
Togoland	489
Kongo Free State.....	502
Lower Kongo.....	506
Mexico	41
Paraguay	139
Senegal.....	513
Siberian Railway.....	409-414
Somali Coast.....	468
German Africa, five times as large as Germany.....	489
Colonial empire.....	489
Rule in Togoland, ten years of.....	491
Horses, cattle, etc., in Central Africa.....	486
Indian traders in Central Africa.....	487
Interior transportation other than by rail or water:	
Angola (Loando and Dondo native carriers).....	498-501
Bolivia (mules, burros, etc.).....	130, 133-135
China (to the Ming tombs and Great Wall).....	608
Kongo Free State (native carriers).....	503
Madagascar.....	451
Maskat (donkey conveyances).....	532
Mexico (stage lines).....	69
Morocco (camels, mules, and donkeys).....	427
Palestine (horses, camels, etc.).....	531
Somali Coast (camels and donkeys).....	468
Syria (diligences on the Damascus road).....	527
Pareels post in Central Africa.....	487

Ports and harbors:	Page.
Belgium (Antwerp).....	224
British Africa.....	459, 468, 487
Chinde, 487; Port Louis, 459; Somali Coast, 468.	
Colombia.....	89, 102
Panama, 89; other ports, 102.	
France.....	260-269
Bordeaux, 260; Boulogne, 268; Calais, 269; Dunkirk, 265; Havre, 25; Marseilles, 247; Rouen, 269.	
French Africa.....	437, 440
Algiers, 437; Bizerta, 440.	
Germany.....	308
Italy (Genoa, changes in commerce).....	368
Malay States (Klang).....	585
Mexico.....	62-64
Matamoras, Tampico, Tuxpan, Vera Cruz, Alvarado, Anton Lizardo, Tlaco- talam, 62; Minatitlan, Frontera, Campeche, Carmen, Sisal, Progreso, San Benito, Tonala, Ventosa, Salina Cruz, Huatulco, 63; Puerto Angel, Acapulco, Manzanillo, Chamela, San Blas, Masatlan, Altata, Playa Colorado, Guaymas, La Libertad, Pichilingue, La Paz, Ensenada, 64.	
New Brunswick (St. John).....	35
New South Wales (Sydney).....	620
Portuguese Africa.....	464, 497
Beira, 464; Loanda, 497.	
Russia (St. Petersburg).....	393
Spain (Barcelona).....	282
Venezuela (La Guayra).....	104
Wales (Cardiff).....	194
Postal facilities and rates:	
Central Africa.....	485-488
German Africa.....	490, 492, 494
Morocco.....	430
Natal Railway.....	479
Persia (Teheran).....	542
Posthouses in Persia.....	535
Slave trade in Nyassaland, blocking the.....	488
Steam marine:	
German.....	314
Russian (Volunteer fleet).....	407
Spanish.....	301
Swedish.....	426
United States.....	694-696
Telegraph:	
Bolivian.....	133
Central Africa (British).....	486
Cuban.....	83
German Africa.....	490, 491, 494
Luxemburg.....	334
Mileage of the world.....	17
Mozambique.....	467
Venezuela.....	104
Tsetse fly in Central Africa.....	483

CONTRIBUTORS.

Adams, Charles L. (consul, Cadiz).....	301
Adams, jr., Robert (minister, Rio de Janeiro).....	108
Baker, E. L. (consul, Buenos Ayres).....	146

	Page.
Barclay, J. Judson (consul-general, Tangier).....	427
Bell, George W. (consul, Sydney).....	620
Benedict, C. H. (consul, Cape Town).....	471
Bowen, Herbert W. (consul, Barcelona).....	282
Bureau of American Republics.....	130
Campbell, John P. (consul, Port Louis).....	457
Chatelaine, Heli (commercial agent, Loanda).....	497
Connolly, John D. (consul, Auckland).....	639
Crawford, J. M. (consul-general, St. Petersburg).....	409
Crittenden, Thomas J. (consul-general, City of Mexico).....	41
De Kay, Charles (consul-general, Berlin).....	305
Derby, John S. (consul St. John, N. B.).....	35
Dobbs, James M. (consul, Valparaiso).....	136
Dillard, George G. (consul-general, Guayaquil).....	121
Donner, Herman (consul, Helsingfors).....	418
Doty, J. Lamb (consul, Tahiti).....	654
Downes, Edward (consul, Amsterdam).....	235
Duffie, M. M. (consul, Winnepeg).....	31
Durham, John S. (consul-general, Port au Prince).....	85
Eckford, Q. O. (consul, Kingston, Jamaica).....	87
Elliott, Isaac M. (consul, Manila).....	618
Estes, William R. (consul, Kingston, Jamaica).....	86
Flagg, Eben M. (vice-consul, Asuncion).....	139
Fletcher, James (consul, Genoa).....	368
Gade, Gerhard (consul, Christiania).....	422
Gibson, Thomas R. (consul, Beirut).....	522
Grant, Louis B. (acting consul-general, Cairo).....	447
Grellet, Charles E. (consul, Algiers).....	431
Grout, J. H. (consul, Bermuda).....	81
Hammond, Edward P. T. (consul, Budapest).....	348
Heenan, Thomas E. (consul, Odessa).....	403
Hernandez, F. Figuero (vice-consul, Madrid).....	698
Hill, George (vice-consul-general, Halifax).....	37
Hollis, W. Stauley (consul, Mozambique).....	460
Horton, George (consul, Athens).....	386
Howells, Anthony (consul, Cardiff).....	194
Hunt, W. E. (consul, Hongkong).....	608
Hürner, Rudolph (vice-consul, Bagdad).....	518
Jastremski, Leon (consul, Callao).....	121
Jernigan, T. R. (consul-general, Shanghai).....	597
Johnson, Harvey (consul, Antwerp).....	224
Jonas, Charles (consul-general, St. Petersburg).....	393
Jones, T. C. (consul, Funchal).....	514
Jones, Wallace S. (consul-general, Rome).....	355
Kane, Dominic J. (consul, Charlottetown).....	38
Karel, John (consul, Prague).....	344
Karel, John (consul-general, St. Petersburg).....	403, 418
Kennedy, D. C. (consul, Malta).....	377
Kirk, Robert J. (consul, Copenhagen).....	240
Landgraf, E. R. (consular agent, Bloemfontein).....	473
Leitch, James (consul, Belize).....	72
Le Mescam, L. (consul, Noumea).....	650
Lewis, Judson A. (consul-general, Sierra Leone).....	508
Little, John M. (consul, Tegucigalpa).....	73

	Page.
McIvor, N. W. (consul-general, Kanagawa).....	611
Mackirdy, A. (vice-consul, Maskat).....	531
Maratta, Daniel W. (consul-general, Melbourne).....	627
McLain, jr., Thomas J. (consul, Nassau).....	78
Madden, J. H. (consul, Smyrna).....	517
Malloy, Thos. (consul, St. Johns, N. F.).....	38
Martin, Henry W. (vice-consul, Barcelona).....	282
Mason, Dean B. (vice-consul-general, Vienna).....	338
Mason, Frank E. (consul-general, Frankfort on the Main).....	327
Mathews, F. A. (consul-general, Tangier).....	427
Mills, Ellis (consul-general, Honolulu).....	657
Mohun, E. Dorsey (commercial agent, Boma).....	502
Morey, W. (consul, Colombo).....	570
Morris, Edward (vice commercial agent, Levuka).....	650
Morris, Henry C. (consul, Ghent).....	16, 703
Morse, Allen E. (consul, Glasgow).....	204
Morse, Samuel E. (consul-general, Paris).....	246
Murphy, George H. (consul, Luxemburg).....	331
Myers, Levy W. (consul, Victoria).....	37
O'Hara, Thomas (consul, San Juan del Norte).....	75
O'Neil, Thomas E. (consul, Stockholm).....	426
Penfield, Frederic C. (consul-general, Cairo).....	450
Plumacher, E. H. (consul, Maracaibo).....	103
Polk, Van Leer (consul-general, Calcutta).....	543
Pollock, Alexander L. (consul, San Salvador).....	74
Pratt, E. Spencer (consul-general, Singapore).....	578
Pringle, D. Lynch (consul-general, Guatemala).....	71
Rairdeu, B. S. (consul, Batavia).....	591, 596
Read, Sheridan P. (consul, Tientsin).....	604
Richman, Irving B. (consul-general, St. Gall).....	335
Riley, John B. (consul-general, Ottawa).....	33
Schnégans, E. (commercial agent, Saigon).....	617
Schramm, Edgar (consul, Montevideo).....	144
Seymour, William H. (consul, Palermo).....	373
Short, Luther (consul-general, Constantinople).....	389
Sommer, jr., H. J. (consul, Bombay).....	562
Spaight, James (vice-consul, Demerara).....	106
Sprague, Horatio I. (consul, Gibraltar).....	303
Stewart, Lewin R. (consul, San Juan, Puerto Rico).....	86
Taney, James B. (consul, Belfast).....	215
Tyler, John (vice-consul-general, Teheran).....	532
Thompson, Thomas J. (minister, Rio de Janeiro).....	112
Vifquain, Victor (consul-general, Panama).....	89
Van Praag, Eli (vice-consul, Paramaribo).....	696
Wallace, Edwin S. (consul, Jerusalem).....	527
Wetter, Edward Telfair (acting consul, Tamatave).....	451
Williams, Harrison R. (consul, San Jose, Costa Rica).....	78
Williams, Ramon O. (consul-general, Havana).....	81
Zalles, Gerardo (consul, La Paz, Bolivia).....	128

SUPPLEMENTAL INDEX.

	Page
EUROPE	747
Railroad mileage of Europe, 747.	
Austria-Hungary	747
Transportation facilities of Reichenberg and Prague, 747; communication between Trieste and the United States, 748; freight rates in Austria, 749; communication at Trieste, 750.	
Belgium	751
Means of communication at Antwerp, 751; navigable waterways, 751; railways, 756; list of regular steamship lines occupying the piers of the Escaut, 758; ocean freight rates, 760; railways of Belgium, 760; railroad charges for baggage, 761.	
Denmark	761
Danish-American steamship service, 761.	
France	762
Railways, 762; reduction in French freight charges, 763; inland navigation, 763; new railroad and cable lines, 765; communication with Marseilles, 765; steamship freight rates, 767; transportation facilities at Nice, 767.	
Germany	768
Railways, 768; railways of Saxony, 769; projected canals, Elbe-Danube, 769; Rhine-Elbe, 770; Berlin-Stetten, 771; Leipzig-Riesa, 771; Kaiser Wilhelm Canal traffic, 772; ocean freights, 773; transportation facilities of the Rhine Valley, 776; in Alsace-Lorraine, 779.	
Greece	780
Piræus-Larissa Railway, 780; Patras, 781.	
Italy	782
Castellamare, 782; Catania, 782; Genoa, 782; Leghorn, 783; Messina, 783; Turin, 784; Venice, 784; regular steamship lines at Venice, 785; new railway line, 785; canal improvements, 786.	
Malta	787
Direct steamship communication with the United States, 789.	
Netherlands	788
Amsterdam, North Sea Canal, 788; Rotterdam, transportation facilities, 799; communication with the United States and other countries, 790; new steamship line to United States, 791; freight rates from Rotterdam, 791.	
Russia	795
Railroads, 795; Siberian railway cost, 798; traffic, 799; through express trains to Siberia, 800; navigable waterways, 800; Baltic-Black Sea Canal, 801; telegraphs, 801; direct steamship communication with Russia, 801; new Pacific steamship lines, 802.	
Spain	803
Cadiz, 803; Corunna, 803; Malaga, 804.	
Sweden and Norway	808
New railroads in Sweden, 808; new steamship line, 808; ocean transportation facilities of Norway, 809.	
Switzerland	810
New railroads, 810.	
Turkey in Europe	810
Railways, 810; United States-Turkish steamship service, 811.	

	Page.
United Kingdom	811
Falmouth railway and steamboat service, 811; New London Midlands Railway, 812; steamship line from England to Finland, 812; recent traffic on Manchester Canal, 812; new shipping facilities at Liverpool, 812; Plymouth transportation facilities, 813; communication with Southampton, 813; Swansea transportation facilities, 814; Belfast transportation facilities, 815.	
NORTH AMERICA	816
Dominion of Canada	816
British Columbia, 816; Vancouver railway and steamship communication, 816; steamship rates to Alaska, 817; Manitoba, 818; Newfoundland, 818; New Brunswick, 820; Nova Scotia, 820; Ontario, 822; St. Lawrence Canal, 823; freight rates on Canadian Pacific, 823; Conneaut-Port Stanley Ferry, 823; navigation facilities at Port Hope, 824; St. John transportation facilities, 824; Sault Ste. Marie-Dalton road, 825; Prince Edward Island, 825; Quebec, 825.	
Mexico	826
Railways, 826; United States-Mexican freight rates, 827; land transportation, 830; communication with Vera Cruz, 831; new railways, 831; Durango-Pacific road, 831; Chihuahua, 832; Matamoros-Monte Morelos road, 832; Rio Grande, Sierra Madre and Pacific Railroad, 832.	
CENTRAL AMERICA	833
Proposed Isthmian Canal, 833.	
British Honduras	834
Proposed railroad, 834.	
Guatemala	835
Honduras	837
United States syndicate in, 838; navigation of the Patuca River, 839.	
Nicaragua	839
Railways, telegraphs, 839; ocean freight rates, 841; steamship contract, 843; Nicaraguan Canal, 844.	
Salvador	844
WEST INDIES	845
British West Indies	845
Antigua, 845; Bermuda, 846; Jamaica, 846; new steamship line, 847; St. Christopher, 848; Trinidad, 849.	
Cuba	850
Telegraphs, 851; water transportation, 851.	
French West Indies	852
Martinique, 852.	
Haiti	853
Projected railway, 854.	
Puerto Rico	855
Santo Domingo (Dominican Republic)	856
SOUTH AMERICA	856
Intercontinental railway, 856.	
Argentine Republic	859
Progress of railway building, 861; telegraphs, 862; foreign communication, 862; ocean freight rates and Argentine trade, 864.	
Brazil	865
Railways, 865; railroad in Parana, 874; steamship communication with Rio de Janeiro, 875; communication with Para, 876; improved steamship service, 877; freight rates from Santos, cable communication, 877.	
British Guiana	878
Foreign transportation, 878; freights, railroads, 879.	
Chile	879
San Francisco-Valparaiso Steamship Line, 880; local transportation, 881.	
Colombia	881
Railways, 881; ocean steamship lines, 884; cable communication, 885; new railway, 885; Panama Canal, 886.	

	Page.
Ecuador	887
Ocean transportation, 889.	
Paraguay	889
Peru	890
Ocean transportation, 891.	
Uruguay	892
Venezuela	892
Ocean steamship lines, 892; railways, 893; cable and telegraph service, 893; new steamship service, 894; inland-navigation project in South America, 894.	
AFRICA	894
Cape to Cairo Railway, 894.	
Abyssinia	895
Angola	896
Azores	897
British East Africa	897
Cape Verde Islands	898
Egypt	899
Freight rates, 900; Suez Canal traffic, 900; opening of the Soudan, 901.	
French Guinea	903
Lourenço Marquéz	903
Madagascar	909
Mauritius	911
Morocco	911
Sierra Leone	913
South Africa	914
Railways, 914; railways in Natal, 915; ocean freight rates, 916; railway construction in Transvaal, 916.	
Tunis	917
ASIA	918
German Asiatic steamship line, 918.	
Aden	919
British India	920
Railways, 920; communication with Bombay, 921; direct steamship line to India, 922.	
Ceylon	922
China	922
Pekin-Hankau Railway, 923; proposed German Railway, 924; internal trade routes, 924; transportation on the Yangtze, 930; navigation of the upper Yangtze with steam vessels, 931; opening of inland waters and treaty ports, 931; transportation charges in China; communication with Chefoo, 933; communication with Tientsin, 933; steamship lines from Pacific ports to China, 934; freight facilities from Atlantic ports to China, 934; telegraphs in China, 934.	
Dutch India	935
French Indo-China	935
Japan	936
Railway construction in Japan in 1897, 937; telegraphs, 939; transportation facilities of Nagasaki, 939; new transportation facilities, 941; New York-Japan steamship line, 941.	
Korea	942
Persia	943
Interior freight rates, 944; foreign freights, 945; Russian railway enterprise, 945.	
Siam	946
Straits Settlements	946
Transportation facilities, 946; communication between the United States and Singapore, 947.	
Turkey in Asia	950
Railways in Syria, 950; German and American steamship lines, 951; transportation facilities for Palestine, freight rates from Alexandretta, 952; caravan routes from Erzerum, 953; transportation from Smyrna, 953; communication with Sivas, 953.	

	Page
AUSTRALASIA	954
New South Wales	954
Railways, 958.	
New Zealand	956
Queensland	957
South Australia	958
POLYNESIA	959
Fiji	959
Hawaii	959
Freight rates, 959; railroads, 960; new railway, 960.	
New Caledonia	961
Shipping line to New Caledonia, 962; proposed steamship line to New Caledonia, 962.	
Philippine Islands	963
Steamship service between Singapore and the Philippine Islands, 963.	
Samoa	963
Society Islands	964

CONTRIBUTORS.

Abercrombie (consul, Nagasaki)	940
Alf (vice-consul, Canton)	935
Allen, Horace N. (consul-general, Seoul)	943
Atwell, W. P. (commercial agent, Roubaix)	763
Avery, W. L. (consul, Belize)	834
Baker (consul, Buenos Ayres)	859
Barlow, Andrew D. (consul-general, Mexico)	826, 831
Barrett (minister Bangkok)	946
Bartleman, R. M. (consul, Malaga)	808
Beaupré, A. M. (consul-general, Guatemala)	837
Bedell, Ossian (consul, Fort Erie)	822
Bell, George W. (consul, Sydney)	963
Benedict, J. S. (commercial agent, Campbellton)	820
Bergh, Robert S. S. (consul, Gothenberg)	808
Bergholz, Leo (consul, Erzerum)	944, 953
Bidlake (consul, Barranquilla)	885
Blom, Jules (consul, Copenhagen)	761
Boardman, C. A. (commercial agent, Rimouski)	825
Bordewich, Henry (consul, Christiania)	809
Bartleman, R. M. (acting consul, Santiago)	898
Boyesen (consul, Gothenberg)	808
Boyle, James (consul, Liverpool)	812
Brittain, J. I. (consul, Nantes)	764
Brihl (consul, Catania)	782
Buchanan, W. I. (minister, Buenos Ayres)	864
Burke (consul-general, Tangier)	911
Campbell, John P. (consul, Port Louis)	911
Canada, W. W. (consul, Vera Cruz)	831
Caples, John F. (consul, Valparaiso)	881
Carter, M. J. (consul, St. Johns)	818
Caughy, Charles M. (consul, Messina)	784
Churchill, William (consul-general, Apia)	964
Chute, L. W. (vice-consul, Buenos Ayres)	862
Cobb, John (commercial agent, Casa Blanca)	912
Coffin (consul, St. Helena)	916
Cole, C. L. (consul-general, Dresden)	769
Comfort (consul, Bombay)	921

	Page.
Corey, George J. (consul, Amsterdam).....	789
Culver, Henry S. (consul, London, Canada).....	823
Cunningham, E. S. (consul, Aden).....	919
Darte, G. L. (consul, St. Pierre).....	852
De Leon, Perry M. (consul-general, Guayaquil).....	887
Denby, Charles (minister, Peking).....	931
Dickinson, Charles M. (consul-general, Constantinople).....	811
Dill, Harry P. (commercial agent, Port Hope).....	824
Dillingham, Frank (consul, Auckland).....	957
Dobbs (consul, Valparaiso).....	879
Doty, Jacob L. (consul, Tahiti).....	964
Doyle (consul, Beirut).....	950
Du Bellet (consul, Rheims).....	763
Du Bois, James T. (consul-general, St. Gall).....	747
Dudley, L. E. (consul, Vancouver).....	816
Dudley, Irving B. (minister, Lima).....	891
Eckford (consul, Kingston).....	846
Everett, Sidney B. (consul, Batavia).....	935
Faulkner, W. H. (consul, Durango).....	831
Fletcher, James (consul, Genoa).....	782
Foster (consul-general, Halifax).....	821
Fowler, John (consul, Chefoo).....	924, 934
Fox, Howard (consul, Falmouth).....	811
Galbraith, Samuel (vice-consul, Antigua).....	845
Gibbs, M. G. (consul, Tamatave).....	910
Goodnow, John (consul, Shanghai).....	923, 934
Gowdy, John K. (consul-general, Paris).....	762
Gowey, John F. (consul-general, Yokohama).....	936
Gracey, Samuel L. (consul, Fuchau).....	934
Graham, W. H. H. (consul, Winnipeg).....	818
Greene, W. Maxwell (consul, Bermuda).....	846
Grimke, A. (consul, Santo Domingo).....	856
Grout, John H. (consul, Malta).....	788
Gudger, H. A. (consul-general, Panama).....	886
Gummere, S. R. (consul-general, Tangier).....	912
Hamilton, John E. (commercial agent, Morrisburg).....	823
Hardy, Arthur S. (consul-general, Teheran).....	945
Harmony, Julio (consul, Corunna).....	803
Harris, Charles B. (consul, Nagasaki).....	939
Harris, Ernest L. (consular agent, Eibenstock).....	810
Haywood, William (consul general, Honolulu).....	960
Hill, Frank D. (consul, Amsterdam).....	763, 770, 812
Hill, Frank D. (consul, Santos).....	877, 878
Hitchcock, E. A. (ambassador, St. Petersburg).....	801
Hoffman, Walter J. (consul, Mannheim).....	779
Hollis, W. Stanley (consul, Lourenço Marquez).....	905
Holloway, W. R. (consul-general, St. Petersburg).....	798, 799, 801, 802
Hopley, John E. (consul, Southampton).....	814
Horton, George (consul, Athens).....	781
Hossfeld, Frederick W. (consul, Trieste).....	751
Hunt, Henry M. (consul, Antigua).....	845
Huntington, H. G. (commercial agent, Castellamare).....	782
Ingraham, D. H. (consul-general, Halifax).....	820
Jarnigan, J. Eugene (consul, Uvilla).....	838
Jenkins, John (consul, San Salvador).....	844

	Page.
Jernigan, T. R. (consul-general, Shanghai)	930
Jewett, Milo A. (consul, Sivas)	953
Jones, A. C. (consul, Chinkiang)	923
Jones, François S. (chargé d'affaires, Buenos Ayres)	862
Kenneday, D. C. (consul, Malta)	787
Kenneday, K. K. (consul, Para)	877
Kindrick, C. W. (consul, Ciudad-Juarez)	832
Lane, R. W. (consul, Smyrna)	953
Ledoux, Urbain J. (consul, Three Rivers)	823
Lincoln, George F. (consul, Antwerp)	758
Listoe, S. (consul, Rotterdam)	791, 794
Little, W. E. (consul, Tegucigalpa)	838, 839
Livingston, Lemuel W. (consul, Cape Haitien)	854
Loomis, F. B. (minister, Caracas)	894
Lyon, Samuel S. (consul, Hiogo)	941
McElrath, Percy (consul, Turin)	784
Macrum, Charles E. (consul, Pretoria)	916
Madden, J. H. (consul, Smyrna)	953
Madrigal, Rafael (consul, Cartagena)	885
Mahin, Frank W. (consul, Reichenberg)	748
Mantius, W. E. (consul, Turin)	784
Masterson, W. W. (consul, Aden)	896
Mayer, Daniel (consul, Buenos Ayres)	862
Merriam, J. W. (consul, Iquique)	879
Metcalf, Horace W. (consul, Newcastle-on-Tyne)	812
Mills, W. W. (consul, Chihuahua)	832
Monaghan, J. F. (consul, Chemnitz)	769, 919
Morlan, A. E. (consul, Belize)	834
Morris, Benjamin (commercial agent, Levuka)	959
Morris, Henry C. (consul, Ghent)	761
Moulton, George H. (consul, Demerara)	878
Murphy, Charles A. (consular agent, Adelaide)	958
Myers, Ira B. (consul, St. John)	824
O'Hara (consul, San Juan del Norte)	841
Patterson, R. F. (consul, Demerara)	879
Patterson (consul-general, Calcutta)	920, 922
Percival, Lewis H. (vice-commercial agent, St. Christopher)	848
Peterson, W. F. (commercial agent, Vancouver)	816
Pooley, Robert P. (consul, St. Helena)	917
Pratt, E. Spencer (consul, Singapore)	948, 963
Prees, G. W. (consul, Swansea)	814
Ragsdale, J. W. (consul, Tientsin)	922
Raondal, G. B. (consul, Beirut)	950
Read, S. P. (consul, Tientsin)	922
Reinberg, Martin, (vice-consul-general, Guayaquil)	889
Rennie, H. M. (vice-consul, Sydney)	955
Roosevelt, G. W. (consul, Brussels)	761
Ruffin, John N. (consul, Asuncion)	890
Schramm, Edgar (consul, Montevideo)	892
Seeger, Eugene (consul-general, Rio de Janeiro)	875
Shaw, W. Irwin (consul, Barranquilla)	881
Shotts, George W. (commercial agent, Sault Ste. Marie)	825
Skinner, R. P. (consul, Marseilles)	765, 941
Smith, Alvin (consul, Trinidad)	849
Smith, J. A. (consul, Leghorn)	783

	Page.
Smith, Thomas (consul, Moscow).....	798
Smithers, G. F. (consul, Chungking).....	931, 932
Sorsby, Wm. B. (consul, San Juan del Norte).....	840, 843
Stephens, J. G. (consul, Plymouth).....	813
Stowe, J. G. (consul-general, Cape Town).....	914
Terres, John B. (vice-consular agent, Port au Prince).....	854
Thackara, A. M. (consul, Havre).....	765
Thierot, J. H. (commercial agent, Freiburg).....	773, 779
Touville, William W. (consul, Belfast).....	815
Vail, D. J. (consul, Charlottetown).....	825
Van Buren, H. S. (consul, Nice).....	767
Wallace, E. S. (consul, Jerusalem).....	951
Watts, Ethelbert (vice and deputy consul-general, Cairo).....	900
Washington, Horace Lee (vice-consul-general, Cairo; consul, Alexandretta).....	900, 952
Weatherill, W. J. (consular agent, Brisbane).....	958
Wetter, E. T. (consul, Tamatave).....	909
Wiesike, Paul (consul, Managua).....	839
Wilcox, L. S. (consul, Hankau).....	931
Williams, J. T. (consul-general, Sierra Leone).....	913
Wilson, Henry L. (minister, Santiago).....	880
Wolf, Paul Eugene (commercial agent, Nouméa).....	961
Yates, A. C. (consul, Patras).....	781

